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EDITED BY
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Some Observations on Inherited Physical and Psychical Characteristics in Tuberculous Patients*

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There is a time when practically every tuberculous infection of the lung of the adult type can heal. The necessity of confining this statement to the adult type of tuberculosis is selfevident to students of the subject but may not be so readily understood by others.

The adult type is the chronic type. It is the type in which the disease occurs after the body has already fought a successful fight against an infection (the early infection of childhood), as a consequence of which it has emerged from the combat with an increased specific resistance against the tubercle bacillus and an ability to combat future infections with greater success. Nearly all tuberculosis in the adult population in civilized countries belongs to this type.

There is another type of tuberculosis which we call the childhood type. It takes an acute form and runs a rapid course. It is best illustrated by the disease as found in children during the first and second years of life. It is also the type that is found among the primitive races when the disease is first introduced among them, such as was illustrated by the American Indians and the Icelanders when the white people first carried infection to them. It is also occasionally seen in adult members of our population, where it appears as acute generalized tuberculosis. This is a type which is opposed by no or apparently little specific resistance on the part of the patient. It spreads rapidly and has the characteristics of an acute infection, while the usual disease of the adult type is that of a chronic infection.

While it may be truly said that there is a time in the life history of nearly every adult type of tuberculous infection, when the host has the power within himself, if properly conserved, to overcome it, it may be said with equal truth that there is rarely a time when the host has it within his power to overcome tuberculous infection of the acute or infantile type.

In attempting to treat tuberculosis successfully it is the adult type in which we are particularly interested. The greatest problem in its success is to bring the patient under treatment at a favorable time, when healing is possible, and to keep him under treatment sufficiently long for healing to take place. In other words, the problem has two phases as far as the physician is concerned; one, the skill to make an early diagnosis; the other, that of understanding and mastering the individual whose body harbors the tuberculous infection so that he will do his part in bringing about a healing.

In this connection it must be said of the adult type of the disease that the attitude of the patient has far more to do with the success of treatment than the tendency to heal or not to heal on the part of the disease. Chronic tuberculosis has a decided tendency to heal. This is evident from the fact that it has become a chronic disease, while its natural course in infants and in unprotected adults is that of an acute process. The reason so many die of tuberculosis is not because it will not heal, but because they ignorantly or knowingly prevent it from healing by the manner in which they comport themselves.

Regardless of what has just been said of the curability of early tuberculosis of the chronic type, there is a great difference in the resistance of different individuals to tuberculosis. Resistance seems to be an individual matter. While nearly all can overcome small infections, and some can overcome massive infections, there is quite a large group of individuals who are not able to obtain a satisfactory healing if the disease becomes moderately advanced. We do not know in what this difference consists, but it is undoubtedly something fundamental in the body and its reactions.

As I study the problem of tuberculosis I am ever more convinced that the pendulum has swung too far to the side of the bacillus and its accompanying anatomicopathological changes. Tuberculosis is, after all, a biological question and bound up with the inherited qualities of its host; and, while tubercle bacilli are the actual producers of the disease and may show variation in virulence in different strains, there are undoubtedly, on the other side, variations in strains of individuals, differences in resistance inherent in them which cause one to succumb to a relatively small infection and permit another to withstand and suffer apparently little inconvenience from a widespread lesion. In other words, heredity is an

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important factor in determining the incidence of tuberculosis as well as its curability when the infection has once become a clinical entity.

Constitutionally inherited characteristics of body cells undoubtedly determine to a large extent the degree of infection and the rapidity of its spread. In other words, the manner in which the bacillus comports itself when it enters the host is probably determined, all other factors being equal, by something which is transmitted to the individual through the germ plasm.

The extent to which clinical tuberculosis depends upon environment and the extent to which it depends upon inherited characteristics cannot be told. Contact with bacilli is essential to infection. Living in bad environment aids the bacillus in establishing disease. But back and beyond both of these is a determinant with which we must reckon.

HEREDITY

It has been shown that persons suffering from clinical tuberculosis have a much greater amount of tuberculous disease in their blood relations than the nontuberculous. Raymond Pearl (1) collected data on this point from fifty-seven family histories, thirty-eight tuberculous and nineteen nontuberculous, the entire number of persons investigated being over five thousand. The history of the tuberculous showed seven per cent. of blood relatives tuberculous, while that of the nontuberculous showed only one and two tenths per cent. In other words, there were six times as many cases of tuberculous disease among the members of the families of the tuberculous as there were among those of the nontuberculous. This percentage of difference cannot be accidental, nor can it be accounted for alone by the fact of greater opportunity of infection. In the fifty-seven histories analyzed by Pearl, he says: "In any case the close contact rate is higher for the tuberculous offspring than it is for the nontuberculous offspring. In other words, these figures indicate that familial contact with active open cases is beyond question a factor in determining the incidence rate of clinically active tuberculosis. It appears equally obvious, however, that it certainly does not account for the whole of the increase in the incidence of the disease which we find to occur as the amount of tuberculosis in the immediate direct ancestry increases."

Not only must we look for the cause of susceptibility to the bacillus in the realm of physical characteristics, but we must recognize that it may also have as its ally certain hereditary psychical peculiarities. I have long noticed that many tuberculous patients manifest certain psychological traits. While we see many heroic struggles made by those suffering from tuberculosis which command the admiration of all who come in contact with them, yet one must recognize that this struggle is not only with the disease but also with the patient's own emotional traits. There is a tendency on the part of many tuberculous patients to be imbued with a spirit of fear; to shrink from the responsibility of life and life's problems and to become selfcentred. They fear their ability to regain health and to maintain it when once attained. They fear exertion. They fear business. They fear the strain of life in general. They shrink from tasks that a normal healthy individual would accept without hesitation. They assume an attitude of dependency which greatly reduces their efficiency. They often become unmindful of the rights of others. All this seems to show a reversion to childhood traits. I have thought of these characteristics as being due to the effect of the disease, but whether they are effects of the disease or whether they are traits which are submerged until brought out by the stress of the disease is not wholly clear. There are undoubtedly many people who under ordinary conditions of health, happiness and economic success are leading normal lives and meeting life's problems in a satisfactory manner whose margin of physical and psychical safety is very narrow. When a disease like tuberculosis comes upon them, producing its harmful effects upon the physical body and, at the same time, adding its cares and worries, with its blasting of hopes and ambitions, its upsetting influence on domestic, business and social relations, their margin of safety is exceeded; their physical and psychical equilibrium is upset, and the particular psychic qualities which were present, though held in abeyance, now manifest themselves.

Some students of psychology believe that this psychic type is the one that is particularly prone to tuberculosis, and that the psychological manifestations here described as manifesting themselves as a result of the disease are primary and have something definite to do with the development of clinical tuberculosis. This is the type of regressive personality; the type that turns to shelter; the type that meets stress but poorly, be it an excessive physical or mental strain, or be it an infection. Mühl (2 and 3) has recently contributed two important papers bearing on the psychical traits of tuberculous patients. She believes that the personality is primary, that it antedates and is a factor in the causation of the disease. The emotional traits present cause a prodigal misuse of energy which weakens the individual and makes him susceptible to the disease.

In the treatment of tuberculosis success is greatly augmented by an understanding of the patient and his emotions against which he is obliged to struggle. The psychical side of the tuberculous patient requires and demands as much care and consideration as the physical side; for harmful stimuli which are capable of upsetting the normal physiological equilibrium of the patient may arise as well from one source as the other.

Future study of tuberculosis and the tuberculosis problems can well be directed toward the question of type. Patients must be studied from the viewpoint of the nervous, psychological and endocrinological types. Their general cellular resistance must be observed. These factors must not only be taken into consideration in the individual, but in his forebears as well.

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Prostatic Massage as a Prophylactic Measure in Acute Gonococcal Infections of the Anterior Urethra

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In a recent contribution (1) on the subject of the obstinate gonococcal infections in the male genital tract, I made reference to a study of the prostate and seminal vesicles in a series of more than one hundred cases of acute anterior gonococcal urethritis (first infections) in which there was no clinical evidence of posterior involvement. In about thirty per cent. of the cases thus studied, it was found that the prostate was enlarged, soft and congested; and although the urine voided in two glasses (Thompson test) showed a clear second glass, the urine voided after gentle massage of the prostate revealed the presence of varying amounts of mucus and pus, but no gonococci. In other words, there was unmistakable evidence of the existence of a low grade, nonvenereal, chronic inflammation in the prostate, without clinical symptoms other than those characteristic of the acute infection in the anterior urethra; in a smaller percentage, the seminal vesicles likewise showed evidence of chronic inflammation. This condition was accounted for as the result of genital trauma, either in the form of excessive sexual indulgence, masturbation or withdrawal, practised for long periods.

I considered these findings a rational explanation of those not uncommon cases which run their course as a simple uncomplicated anterior infection and then without warning symptoms of any kind suddenly or gradually appear as a low grade posterior infection with a most annoying tendency to chronicity and often to serious complications. It appeared quite clear that there was a direct and insidious connection between the low grade preexisting nonvenereal inflammation in the prostate and the sudden inexplicable manifestation of the gonococcal infection in the posterior adnexa after the case seemed to have run its course as an uncomplicated anterior urethritis. Furthermore, it was felt that it would constitute a distinct advance in our therapy if advantage could be taken of the information derived by these data to the end that these extensions of the infection to the posterior adnexa might be prevented by the adoption of suitable prophylactic measures.

Quoting: "If therefore the adnexa are compromised in advance of and independently of the gonococcal infection in about thirty per cent. of cases, we can readily understand why the inflammatory process spreads quickly to these organs and steadily persists as a low grade infection, presenting no acute symptoms and strongly resistant to usual therapeutic measures. If this observation can be confirmed by additional study of a large number of cases, it might be desirable to examine the prostate and seminal vesicles in every acute anterior case, in the hope of instituting appropriate treatment towards reducing any existing inflammation or congestion in these organs. It is a matter of grave doubt in the writer's mind whether such a prophylactic measure is feasible in the presence of an acute infection in the anterior urethra, but the question can be answered only by careful and patient experimental study. If the suggestion is a practical one, it would appear that many of these obstinate posterior cases might be prevented by this means." (loc. cit.)

Prophylactic massage of the prostate in anterior urethritis not only sounds a new and untried note in our treatment of male gonococcal infections, but is diametrically opposed to the usually accepted dictum that there is serious danger in any manipulation of the adnexa in the presence of an acute anterior infection. Never having seen any reference in the literature, to the advisability of this procedure, I made the suggestion rather reluctantly, in the hope that others might be attracted to its possibilities and report the result of their observations.

The procedure was adopted as a routine measure in my practice and the results seem to have justified the experiment beyond any doubt. The number of cases thus treated (forty) is not large enough to warrant a definite conclusion, but there is sufficient satisfactory evidence to justify a continuance of the procedure and to recommend its adoption by others. In not a single instance has there been any visible extension of the inflammation to the posterior urethra, and in a goodly proportion of cases the preexisting congestion has been relieved and improved.

It cannot be gainsaid, of course, that an identical result might have been attained without the massage of the prostate; nevertheless, in view of all the circumstances it is fair to assume that the massage must have had a tonic effect on the organ because of the increased blood supply thus induced, with the resulting consequent augmentation in the power of the prostate to resist the bacterial invasion from the anterior urethra. It should be emphasized that one should not forget the element of danger associated with this procedure. Even in normal cases, prostatic massage is not devoid of harmful consequences, if performed carelessly or violently or too frequently; but I believe there is little to be feared if the procedure is carried out gently and cautiously, and with due regard to the presence of the infection in the anterior urethra.

It is of interest to note that these observations have been fully confirmed by Wohlstein, of Bad-Pistyan, Czechoslovakia (2). In a clinical report giving detailed data of a number of cases of urethral infection, he states that chronic prostatitis has been observed in quite a large number of cases of acute anterior infection without any evidence of posterior involvement, and he expresses the opinion that such instances are much more frequent than is generally assumed. He urges careful examination of the prostate in every affection of the urethra.

Furthermore, he also advocates massage of the prostate as a prophylactic measure against the spread of the infection in acute anterior cases. He does not wait until the signs of posterior involvement appear, but in every case of acute anterior urethritis he begins

to employ massage of the prostate at the end of the second week, even though there be no evidence that the infection has extended to the posterior urethra. In all cases thus treated, he has not encountered one case in which the prostate became involved in the inflammatory process. He expresses the opinion that the effects of prostatic massage are not purely mechanical, but that it induces an increased flow of blood to the organ, and because of that fact, the prostate is better able to resist any threatened bacterial invasion from the anterior urethra.

I have adopted the following technic: The patient presents himself with a full bladder, and voids in two glasses, retaining the balance of the urine in the bladder. The prostate is then gently and cautiously massaged, and the urine remaining in the bladder is voided in a third glass. This is followed by the treatment for the anterior urethritis. The massage is given every four or five days and is continued so long as the prostate shows evidence of the chronic inflammation.

SUMMARY

Unsuspected nonvenereal chronic inflammation of the prostate and seminal vesicles is quite commonly encountered in probably thirty per cent. of cases with first urethral infections.

The presence of this low grade inflammation accounts for those difficult cases in which a mild anterior urethritis suddenly emerges as an acute or subacute prostatitis with a tendency to chronicity and complications.

As a prophylactic procedure, the prostate and seminal vesicles should be examined in every case of anterior urethral infection.

If the prostate is found congested—large, soft and boggy, gentle massage carefully performed, may act as a prophylactic against the extension of the inflammation to the adnexa, at the same time reducing the preexisting chronic congestion in the organ.

The value of this procedure has been demonstrated in a fairly large number of cases, which justifies its recommendation for further observation by urologists.

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114 East Sixty-first Street.

Cutaneous Tests with Suspensions of Treponema Pallida*

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Since the publication of Noguchi's first article (1) on luetin in 1911, much literature has appeared on the subject and the reaction, as a diagnostic test for syphilis has been both cricitized and defended. Many workers, soon after its introduction, confirmed Noguchi's results. But later observers have failed to do so and, in spite of its fairly universal recommendation in textbooks, its use has been practically abandoned.

Sherrick (2), in 1915, showed that potassium iodide administered orally would cause positive luetin reactions in normal persons. Furthermore, he found that intradermal injections of agar, starch, and other substances would give similar results in nonsyphilitic patients receiving iodine containing drugs. Cole and Paryzek (3), in 1917, demonstrated that certain salts other than potassium iodide would influence the luetin reaction in the same manner.

In 1922, Kolmer and Greenbaum (4) found that luetin and ascitic agar gave reactions of the same degree and of the same kind. They further found that a saline suspension of Treponema pallidum did not yield allergic reactions: "reactions occurring among syphilitic patients were sometimes slightly larger and better defined than those occurring in healthy subjects, but the differences were slight and of no diagnostic significance." They ascribed the reactions occurring among syphilitic patients following intracutaneous injections of old luetin, the control fluid or vaccine of treponema to nonspecific and physical processes of antiferment action. Smith and Gill (5) corroborated their work in regard to the reactions of luetin and ascitic agar in syphilitic and nonsyphilitic patients.

The purpose of our experiment was to repeat that part of the work of Kolmer and Greenbaum in which they used a saline suspension of Treponema pallida freed from culture media, and to supplement this by using a similar suspension in one twentieth normal sodium hydroxide. It seemed possible that if the protein of the treponema could be put into solution, a more effective reaction would be obtained. Sodium hydroxide was suggested because of its use in skin protein sensitization tests for hay fever and asthma.

The H. K. Mulford Laboratories very kindly furnished us the saline suspension, prepared as follows: "The treponema are planted in flasks of serum bouillon and incubated for approximately two months. If, on microscopic examination, sufficient growth has taken place and the purity of the growth established, the culture is centrifugalized at a low speed for the purpose of throwing out heavy particles. The culture is then centrifugalized at a high speed, the sediment is separated from the supernatant fluid, and emulsified in saline solution. The sediment is washed in this manner by centrifugalization and resuspended

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TABLE I

TESTS WITH ALKALINE AND SALINE SUSPENSIONS OF TREPONEMA PALLIDA. OUTLINES OF 100 CASES INCLUDING TWENTY-TWO (MARKED *) RECEIVING POTASSIUM IODIDE AS DESCRIBED ABOVE.

Case No.	Age	Sex.	Race	Wass.	Clin. Syph.	Syph. Hist.	Diagnosis	Medication	T.P. in Saline Result	T.P. in Saline Days Obsd.	T.P. in NaOH Result	T.P. in NaOH Days Obsd.
1	23	F	B	0	0	0	Mastitis	Atropine	N	12	N	12
2	53	F	B	0	0	0	Ascites	None	—	—	N	11
3	19	F	B	0	0	0	Arthritis	Salicylates	—	—	N	14
4	49	M	B	0	0	0	Duodenal ulcer	None	—	—	N	14
5	33	M	B	0	0	0	Nephritis (uremia)	Mag. Sulph.	N	14	N	14
6	39	M	W	0	0	0	Auric. fibrillation	Digitalis	N	2	N	2
7	47	F	W	0	0	0	Diabetes mellitus	Insulin	N	12	N	12
8	15	M	W	0	0	0	Acute nephritis	None	N	12	N	12
9	68	F	W	0	0	0	Tic douloureux	Codeine and Aspirin	N	9	N	9
10	35	F	W	0	0	0	Neurosis	I.Q.S. & K I	N	9	N	9
11	35	F	W	0	0	0	Nonspecif. vaginitis	Local	N	2	N	2
12	38	M	W	0	0	0	Gastric ulcer	None	N	5	N	5
13	38	M	W	0	0	0	Gastric ulcer	None	N	10	N	10
14	18	F	B	0	0	0	Periorbital cellulitis	None	N	7	N	7
15	15	F	W	0	0	0	Osteomyelitis, femur	Salicylates	N	10	N	10
16	48	F	W	0	0	0	Retrodisplaced uterus	I.Q.S. & Blaudes	N	10	N	10
17	48	F	W	0	0	0	Arthritis	None	N	9	N	9
18	57	M	W	0	0	0	Mitral stenosis	Digitalis	N	9	N	9
19	64	M	W	0	0	0	Arteriosclerotic heart disease	Digitalis	N	10	N	10
20	25	M	W	0	0	0	Tuberculosis?	None	N	8	N	8
21	16	M	W	0	0	0	Nephritis	None	N	8	N	8
22	32	M	W	0	0	0	Arthritis	Salicylates	N	8	N	8
23	71	M	W	0	0	0	Arteriosclerotic heart disease	Digitalis	N	8	N	8
24	13	F	W	0	0	0	Cystitis, tonsilitis	Local	N	6	N	6
25	13	M	W	0	0	0	Nephritis	None	N	8	N	8
26	18	F	W	0	0	0	Psychosis	None	N	3	N	3
27	22	F	W	0	0	0	(Nurse)	None	N	14	N	14
28	25	F	B	0	0	0	Gallstones	None	N	12	N	12
29	19	M	W	0	0	0	Typhoid fever	None	N	14	N	14
30	7	M	B	0	0	0	Petit mal	None	N	3	N	3
31	27	M	B	0	0	0	Typhoid fever	None	N	14	N	14
32	30	F	W	0	0	0	Arthritis	Salicylates	N	14	N	14
33	57	M	W	0	0	0	Pleurisy	Terp. Hyd. & Her.	N	14	N	14
34	29	M	W	0	0	0	Cholecystitis?	None	N	14	N	14
35	20	M	W	0	0	0	Fracture, tibia	K.I.*	N	8	N	8
36	44	F	B	0	0	0	Carcinoma	K.I.*	N	3	N	3
37	53	M	B	0	0	0	Pachymeningitis int. hem.	K.I.*	N	8	N	8
38	19	M	W	0	0	0	Gastric ulcer	K.I.*	N	4	N	4
39	22	F	B	0	0	0	Paralysis	K.I.*	N	15	N	15
40	12	F	B	0	0	0	Appendicitis	K.I.*	N	15	N	15
41	23	F	B	0	0	0	Appendix abscess	K.I.*	N	15	N	15
42	24	F	B	0	0	0	Salpingitis chr.	K.I.*	N	15	N	15
43	19	F	B	0	0	0	Cardionephritic arthritis	K.I.*	N	15	N	15
44	42	F	B	0	0	0	Cholecystitis	K.I.*	N	8	N	8
45	18	F	B	0	0	0	Appendicitis	K.I.*	N	6	N	6
46	15	F	W	0	0	0	Osteomyelitis	K.I. 2 days aspirin	N	15	N	15
47	21	F	W	0	0	0	Salpingitis chr.	K.I.* Aspirin	N	15	N	15
48	25	F	W	0	0	0	Gallstones	K.I.*	N	12	N	12
49	12	M	W	0	0	0	Fracture femur	K.I.*	N	15	N	15
50	28	M	W	No record	0	0	Fracture pelvis	K.I.*	N	15	N	15
51	32	M	W	0	0	0	Arthritis	K.I.* Aspirin	N	15	N	15
52	28	M	W	0	0	0	Resection knee	K.I.*	N	8	N	0
53	30	F	B	0	0	0	Diabetes mellitus	K.I.*	N	3	N	0
54	19	M	W	No report	0	0	Hernia	K.I.*	N	6	N	6
55	29	M	W	0	0	0	Arthritis	K.I.* Salicylates	N	2	N	2
56	75	M	B	0	?	0	Prostatism	Digitalis	N	8	N	8
57	17	F	B	0	0	0	Pregnancy	None	—	—	CD	6
57	25	F	B	0	0	0	Salpingitis chr.	I.Q.S. and Blauds	—	—	CD	10
59	35	F	B	0	0	0	Hernia	K.I.*	CD	6	CD	6
50	14	M	W	0	0	0	Osteomyelitis	K.I.*	CD	8	CD	8
61	25	M	W	0	0	0	(Intern)	None	W	14	W	14
62	40	F	W	4+	+	?	Cataract, syphilis	Asph.	—	..	N	7
63	33	M	B	4+	+	?	Luetic heart disease	Digitalis	N	8	N	8
64	53	M	B	4+	+	?	Luetic heart disease	Digitalis	N	6	N	6
65	18	M	B	No report	+	?	Luetic iridocyclitis	None	N	6	N	6
66	29	F	W	4+	+	?	Syphilis	Asph.	N	5	N	5
67	37	M	W	4+	+	+	Paresis	Asph.	N	8	N	8
68	12	M	W	4+	+	0	Optic atrophy Congen. syphilis	K.I. Sulphasph	N	8	N	8
69	38	M	B	4+	+	?	Syphilis	Asph.	N	9	N	9
70	23	M	B	4+	+	+	Chancre—syphilis	Asph.	N	2	N	2
71	24	F	B	0	+	+	Treated secondary syphilis	Asph.	N	12	N	12
72	23	F	W	4+	+	+	Syphilis and pregnancy	Asph.	N	9	N	9
73	58	M	B	4+	+	?	Prostatism—syphilis	Asph.	N	4	N	4
74	19	F	B	0	+	0	Salpingitis chr.	Asph.	N	10	N	10
75	45	M	B	4+	+	?	C. N. S. syphilis	K.I. and Asph.	N	15	N	15
76	35	M	B	S.F. 4 +	+	?	C. N. S. syphilis	None	N	2	N	2
77	38	F	B	4+	0	?	Nephritis (uremia)	Digitalis Asph.	N	12	N	5
78	26	F	B	4+	0	?	Gastric ulcer	None	—	—	N	13
79	19	F	B	3+	0	?	Puerperal sepsis	Asph.	N	5	N	5
80	27	M	B	4+	0	?	Syphilis	Asph.	N	4	N	4
81	49	M	W	No report	?	?	Tabes dorsalis	None	N	4	N	4
82	21	M	B	4+	0	?	Fracture skull—syphilis	None	N	9	N	9
83	16	F	B	4+	0	?	Syphilis—cystitis	Asph.	N	2	N	2
84	18	F	W	4+	0	?	Pregnancy—syphilis	None	N	6	N	6
85	7	F	W	4+	+	0	Malnutrition	None	N	8	N	8
86	19	M	B	4+	+	+	Chancre	Asph.	N	3	N	3
87	19	M	B	4+	+	?	Syphilis, tertiary	Asph.	C	9	C	9
88	12	M	W	4+	+	?	Cong. syphilis	Asph.	D	6	D	6
89	30	M	W	4+	+	+	Syphilitic heart disease hernia	Asph.	N	12	DC	12
90	27	F	B	4+	+	?	Facial paralysis and syphilis	Asph.	D	6	D	6
91	19	F	B	4+	+	+	Chancre	Asph.	DC	12	DC	12
92	48	F	B	0	+	+	Tertiary syphilis	Asph.	—	—	DC	14
93	66	M	W	0	+	+	Aneurysm	None	W	12	W	12
94	18	F	W	0	+	0	Cong. syphilis (treated) Interstitial keratitis	Bi.K. Tartrate	DC	12	DC	12
95	40	M	W	4+	?	?	Syphilis	Asph.	DC	8	DC	8
96	19	F	W	2+	0	?	Cystitis and pyelitis	Local	—	—	DC	6
97	40	M	B	?	+	+	Luetic heart disease	None	—	—	N	5
98	18	M	B	?	+	+	Chancre—syphilis	Asph.	—	—	N	5
99	13	F	B	4+	+	0	Cong. lues and C.N.S. syphilis	None	—	—	N	5
100	18	F	W	0	+	0	Treated cong syphilis Interstitial keratitis	BiK. Tartrate	—	—	C	6

N=No variation from control.
C=Circumpapular congestion greater than in control.
D=Duration of reaction for longer time than control.
W=Typical wheal with negative control.

in saline at least three times to rid the treponema of culture media. The final suspension should reveal approximately twenty to thirty treponema to the dark field. Five tenths per cent. phenol is added as a preservative."

The sodium hydroxide suspension was prepared by mixing equal quantities of the saline suspension and one tenth normal sodium hydroxide. In about half the cases, this mixture was used at once; and in the remainder, the alkali was allowed to act on the treponema for varying periods up to one month. It was found that the use of solutions of sodium hydroxide stronger than one twentieth normal caused such an inflammatory reaction in the skin as to interfere with the test.

All of our cases were tested with the alkaline material and eighty-seven of the one hundred with the saline suspension also. A control of one twentieth normal sodium hydroxide was carried in every case. At first, controls of normal saline were used in addition, but it was later deemed unnecessary to continue this procedure.

The three injections were made simultaneously, the suspensions containing treponema being used on the upper and lower left arm and the control on the lower right. Sufficient fluid was injected intradermally in each case to raise a small superficial vesicle. The amount used for each test was approximately 0.04 c. c. Aseptic precautions were employed throughout.

Observations were made within two hours following the injections, daily thereafter for the first week, and on alternate days during the second week. In many instances they were more frequent. A number of patients left the hospital before the expiration of the two week period of observation, but in all of these the reaction had completely subsided. No delayed reactions were observed in any of the 187 tests. The observations were made by two different examiners on alternate days.

After the completion of 139 tests as outlined, it became apparent to us that neither of the two preparations used gave promise of clinical usefulness. In view of the work of Sherrick cited above in which it was shown that agar and various other materials gave positive skin reactions in patients receiving iodides, we attempted to determine if such reactions would be given by treponema freed of extraneous material. Accordingly, twenty-two patients without any evidence of syphilis were given twenty grains of potassium iodide three times a day for a two day period prior to injections and throughout the period of observation. The remainder of the technic used in these cases was the same as that already described.

In the following tables those patients who gave a positive Wassermann reaction, a characteristic history of syphilitic infection, or clinical signs of the disease were designated as syphilitics. Those showing none of the foregoing indications were regarded as nonsyphilitics. In the table of individual cases (Table I), the evidence of syphilis in each case is recorded.

It should be stated that the skin reactions were in no cases as marked as those pictured in Noguchi's original article. In two cases the reactions were definite, a wheal appearing at the site of both the treponema injections and lasting two or three days, while the control test remained absolutely negative. Both of these cases gave negative Wassermann reactions, but one of them gave the history of a chancre forty years previously and had an aneurysm of the aorta. The other was an intern in whom there was no reason to suspect syphilitic infection.

There were, however, differences noted in several instances (Table 1) between the reactions to the treponema and the control injections. These differences consisted of an increase in the amount of inflammation, of increased duration of the reaction, or of both of these manifestations, as compared with the alkali control. In none of these cases, in our opinion, was the difference sufficiently marked to be of practical diagnostic value.

The results shown in Table I may be summarized as follows:

TABLE II

SHOWING SUMMARY OF RESULTS OBTAINED ON SYPHILITIC AND NONSYPHILITIC PATIENTS WITH INTRADERMAL INJECTIONS OF TREPONEMA PALLIDA IN SALINE AND TREPONEMA PALLIDA IN ONE TWENTIETH NORMAL SODIUM HYDROXIDE SOLUTION. BASED ON TABLE I, WHICH SEE FOR LEGEND.

Syphilitics

Treponema in N/20 Sodium Hydroxide		*Treponema in Saline*	
N — 29	(74 per cent—Show no variation from control).	N — 23	(74 per cent—Show no variation from control).
CD — 5 C — 2 D — 2 W — 1	(26 per cent—Show some veriation from control).	CD — 4 C — 1 D — 2 W — 1	(26 per cent — Show some variation from control).

Nonsyphilitics

N — 34	(92 per cent—Show no variation from control).	N — 31	(97 per cent—Show no variation from control).
CD — 2 C — 0 D — 0 W — 1	(26 per cent—Show some variation from control).	CD — 0 C — 0 D — 0 W — 1	(3 per cent — Show some variation from control).

TABLE III

SHOWING SUMMARY OF RESULTS OBTAINED IN NONSYPHILITIC PATIENTS RECEIVING SIXTY GRS. POTASSIUM IODIDE DAILY, WITH INTRADERMAL INJECTIONS OF TREPONEMA PALLIDA IN SALINE AND TREPONEMA PALLIDA IN ONE TWENTIETH NORMAL SODIUM HYDROXIDE. BASED ON TABLE I, WHICH SEE FOR LEGEND.

Treponema in N/20 Sodium Hydroxide		*Treponema in saline*	
N — 22	(92 per cent—Show no variation from controls).	N — 22	(92 per cent—Show no variation from controls).
CD — 2 C — 0 D — 0 W — 0	(8 per cent—Show some variation from control).	CD — 2 C — 0 D — 0 W — 0	(8 per cent — Show some variation from control).

From Table II it will be seen that eight per cent. of nonsyphilitic cases in our series gave a reaction which might be considered as positive, whereas the definitely syphilitic patients gave only twenty-six per cent, of such positive reactions. This relatively large percentage of false positives when compared with such a relatively small percentage of true positives seems to demonstrate that the preparations used are unfit for diagnostic purposes.

The higher percentage of positives found in syphilitics is in keeping with the work of Kolmer, Smith, and others, who have found that the skin of a syphilitic patient is more sensitive to intracutaneous injections than is the skin of a normal individual.

The results obtained in the cases which had received potassium iodide appear to us to illustrate more clearly than ever that Sherrick's iodide reactions were due entirely to foreign proteins of the culture media, and in no part to the proteins of the culture media.

CONCLUSIONS

1. Intradermal injections of a saline suspension of Treponema pallida give so few positive and such contradictory skin reactions that it is not of use as a practical diagnostic test.

2. A suspension of Treponema pallida in one twentieth normal sodium hydroxide solution offers no advantages over a simple saline suspension of Treponema pallida for diagnostic purposes.

3. The administration of potassium iodide by mouth in doses of sixty grains daily does not affect the skin reactions produced by the intradermal injection of a suspension of Treponema pallida in either saline or one twentieth normal sodium hydroxide solution in nonsyphilitic individuals.

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Gonorrheal Urethritis in the Male*

An Interpretation of the Disease Based Upon the Correlated Findings from Many Fields

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The history of gonorrhea is remarkable in a great many respects. It is neither equalled nor approached by that of any disease to which mankind is susceptible. It is a long study of separate problems that lack proper correlation of findings. There is no disease that compares with it in confusing the medical profession. The picture is simple but it has been terribly blurred and this blurring has worked fearful havoc upon the human race.

It seems almost useless to speak of the importance of this disease from a social and economic viewpoint but its dreadful toll of innocent women is far beyond the comprehension of a single mind. In them it has a direct and an indirect mortality that is appalling and a morbidity that would stagger society if it were known. This same society that has paid toll has been and is standing in its own sad light by a false modesty which brands it an "unspeakable disease," and yet, one hardly knows how to break down this barrier without doing more harm than good.

Being an unspeakable disease, it has attracted few of the best medical minds, particularly in this country, and its present outlook is bad. In the division of medical specialties it belongs to that branch that has of late graduated from genitourinary diseases to urology. They, who were once extremely interested in gonorrhea, now consider it somewhat beneath them and are thinking surgery of the urogenital tract. In their national meetings the question of gonorrhea is almost taboo, because the countless poorly thought out papers caused the move in selfprotection.

For these and other reasons the profession at large still remains at the mercy of any manufacturing chemist who can make and attractively advertise a gonococcicidal substance. Considering that these can range from distilled water up and can include anything but proper culture medium of just the right hydrogen ion concentration, it is obvious that the advertising must be of paramount importance.

Having spent countless years in following one particular trend of thought the curing of gonorrhea through the direct gonococcicidal action of some chemical despite the fact that it is directly contrary to the entire picture of the malady, is it not about time that we paused for breath? Should we not drop a few of the dreams of centuries and look in other directions for our answer? To do this we must correlate our laboratory and clinical knowledge and redigest it carefully. As this is done it is found possible to recast the picture to conform more nearly with the established facts that have seemed to point nowhere.

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PATHOLOGICAL CONSIDERATIONS

Before going further into the subject, however, let us briefly consider the pathological characteristics of the disease in the male for unless one understands these he is poorly prepared to grasp the remainder of the subject. The picture in its entirely is fairly complete and clearcut but it is scattered widely throughout medical literature and the importance of many of its smaller details are forced upon one only after years of thought and clinical experience.

The gonococcus is a germ with decided predilections for those environmental conditions that it considers ideal. Its natural habitat is mucous membrane lined with columnar or cuboidal epithelium (1-2-3). It can grow in the mucus covering squamous lined mucosa but it rarely penetrates its surface (4-22).

Having reached the columnar epithelium of the urogenital tract it quickly finds its way into the intercellular spaces and penetrates to the spaces of the (4-5) submucosa and at times along the trabeculæ of the corpus spongiosum. It does not enter the cells but forms minute colonies in the spaces between them where it grows with a degree of luxuriance dependent upon many factors (22), some of which will be considered later.

Being in its ideal habitat it completes its individual life cycle and sets up an inflammatory reaction that varies in different individuals. The immediate re-

sults of this irritant are a capillary engorgement with a consequent escape of serum and the diapedesis of polymorphonuclear leucocytes (2). The current of these is toward the urethral lumen so that, with the greatly increased production of mucus from secretory stimulation, there is set up a virtual tissue diarrhea. Such a condition, as it likewise occurs in other mucous membranes from other infections, is evidently Nature's best immediate means of combatting infections.

Contrary to the idea generally held upon this question the exuding fluids are evidently of greater value than the phagocytic action of the leucocytes. Also, their value is evidently solely mechanical at this stage for they have no bactericidal influences upon the gonococcus, which can be cultured after prolonged immersion in these fluids.

That phagocytosis is of secondary value is evident for several reasons which can be briefly stated as follows:

1. Phagocytosis is almost entirely confined to the urethral lumen and the superficial epithelium. It occurs in transit from the deeper layers but does not act upon the deeper placed bacteria which really perpetuate the disease (1-2-5-22).

2. The leucocytic cytase has no effect whatever upon the gonococcus. In fact, phagocytosis seems to preserve the gonococci and not to harm the leucocyte (7-8).

3. The germ will grow upon artificial culture medium just as well after as before phagocytosis.

4. It is therefore obvious that in gonorrhea the leucocyte bears about the same relation as the refuse wagon does to the housekeeper; gets it off the premises but it is still the gonococcus.

The result of this inflammatory reaction upon the surface epithelial cells is to loosen their attachments and reduce their nourishment to such an extent that many of them are shed off and replaced by a few or many layers of cells. The more superficial of these tend toward the squamous type and if the attack is prolonged they may ever keratinize to some extent (9). Also, in the prolonged and severe inflammatory reactions, there is more or less round cell infiltration which at times passes deeply into the corpus spongiosum. It is these infiltrations that later undergo fibrous tissue transformation and become the forerunners of stricture formation.

The infection finds its way into the many small mucous crypts and channels in association with the urethra (9-22). Here the pathological condition is much the same as in the free urethral mucosa except that the outlet is often blocked by swelling and drainage prevented. This naturally limits the escape of fluids and checks Nature's early efforts to remove the infection. The lumen of these occluded mucous structures fill with pus and epithelial debris (1-9). These accumulations of gonorrheal pus undergo disintegration both as to bacterial and cellular content and are of great importance in the present discussion.

The minuter pathology of Cowper's glands, the prostatic acini, seminal vesicles and epididymi differ in structure but not in kind.

RELEVANT FEATURES OF GONOCOCCAL GROWTH

Let us now turn to a consideration of certain cultural characteristics of the gonococcus and the effects of some of its products upon the body for they are of much importance in an understanding of the subject in hand. Our investigations in this regard are leading us more surely to the truth than has been realized and if we apply what we now know to the chain of evidence, we will find that it is a very valuable and suggestive link.

When the gonococcus is grown under artificial cultural conditions it follows a definite life cycle the stages of which are readily shortened or prolonged by very slight influences. There is a lag period which, in new cultures, ranges from twelve to twenty-four hours. The more suited the medium the shorter this period is in first cultures. In subcultures the lag period is gradually shortened, as would be expected.

Following this lag period there is a period of luxuriant growth the duration of which depends largely upon its nourishment. This is generally from twenty-four to seventy-two hours. After this a stage of autolysis sets in wherein the bacteria disintegrate and the culture becomes sterile. In new cultures and early subcultures one must not wait more than two or three days as a rule to subculture or he will lose his strain. Should the culture medium not be the most ideal, so that the germs from the start must struggle to survive, it will be found that bacteria of a more resistant type are generated. If, for instance, a tube of hydrocele agar and a tube of cornstarch agar, both of the same hydrogen ion concentration, be inoculated with the same strain of gonococci it will be found that they have one difference when examined under the microscope. At the end of four days those on hydrocele agar will only faintly take the stain showing that autolysis is well established and viability has ceased. Those from cornstarch agar at the end of six days will have almost reached the same stage, but in each field will be seen from two to a dozen larger and deeply staining diplococci that are subcultured with ease. Having been subcultured they seem able to stand more of an untoward nature than will subcultures from the original strain. This survival of the fittest may explain some of the vagaries of the disease in vivo, particularly the behavior of the urethritis in the presence of acute epididymitis.

If we take a dilute suspension of these dead gonococci and inject it into the normal urethra we will find that in from four to twelve hours there is set up a purulent, nonbacterial discharge that lasts from twenty-four to forty-eight hours and spontaneously subsides. The same thing, in perhaps a more marked degree, happens in the gonorrheal urethra but owing to the infection present it does not always entirely subside so promptly, though after two days there remains only slight activity above what was originally present (8-10-11-12-13).

With but a few faintly dissenting voices investigators are agreed that the gonococcus forms no exotoxin; that the gonotoxin is solely an endotoxin (15-16-17-18). There being nothing of the nature of an exotoxin in its life cycle, it cannot act as a tissue irritant until there is a liberation of its endotoxin by germ disintegration. It is likewise obvious that the liberated gonotoxin is highly bacteriotropic. In other words, it favors phagocytosis and is very highly irritating to the urethral mucosa, as has been previously mentioned. It is also much in evidence

that the gonotoxin is peculiar in that it does not desensitize laboratory animals upon repeated injection but, on the contrary, seems to sensitize them (19-20-21). In this respect the urethral mucosa is no exception, as is amply shown by our clinical experiences, for it becomes increasingly sensitive to very small quantities of the toxin.

From a clinical point of view gonorrhea presents many apparently contradictory features until we apply to them the results of our knowledge gathered from various fields. Among these may be mentioned the incubation period, the recrudescences of discharge following the imbibing of alcoholics, emptying of the contents of smaller mucous channels through manipulation of any type and sexual excitement or indulgence. More misleading still has been the cessation of urethral discharge with the incidence of acute epididymitis.

INCUBATION PERIOD

Bearing in mind the cultural life cycle of the gonococcus let us reason out what should happen when the germ is placed upon its most ideal habitat, the urethral mucosa. Under these circumstances, by allowing a rather short period of transit for the germ to reach the columnar cells we probably would find that the lag period was shorter than that upon artificial culture media. The period of luxuriant growth does not seem to be greatly altered, as evidenced by direct inoculation experiments (27-28-29), so that at about seventy-two hours from the time of inoculation autolysis should be well established. There is microscopical and abundant clinical proof that this is what really happens. It has been our custom to explain away the incubation period of the disease by citing the difficulty of transit of the germ from the meatus to the intercellular spaces of the columnar epithelium beyond the squamous lined fossa navicularis and to finish up by stating that "the presence of these bacteria set up a violent inflammatory reaction the product of which is a purulent urethral discharge."

It was shown years ago that at the end of thirty-eight hours after artificial urethral inoculation the gonococci had multiplied enormously and had penetrated into the deeper layers of the mucosa (22-23-24-25-26). These observations give us no clue to the conditions occurring at earlier periods but they do show us that the factors that we have used to explain the incubation period do not explain. Their requirements are complete at this period and probably much earlier and yet we must wait usually an equal time longer for the development of symptoms. (Clinical evidence is overwhelming against less than a forty-eight hour incubation time in new infections so that one can safely say that the establishment of the discharge at such early periods is always due to an exacerbation of the patient's own gonorrhea or from a shortly previous sexual contact.)

It, therefore, is obvious that the termination of our incubation period is not due directly to the presence of viable gonococci in the mucous membrane but to the liberation of endotoxin by destruction through autolysis at first and later by possible tissue processes.

To clarify this let us repeat. The transit of bacteria along the squamous epithelium of the fossa navicularis must be rather rapid for the incubation period in the male does not differ from that of the female where the infection commonly is engrafted primarily upon the columnar epithelium. The lag period should be but a short time and the period of luxuriant growth apparently is not greatly altered. Autolysis occurring throughout the various depths of the mucosa probably prompts a more ready inflammatory response than is the case when the bacterial toxin is injected into the urethral lumen. The four to twelve hours required for the appearance of a purulent discharge after the urethral injection of gonotoxin is probably greatly reduced.

With a bacterium so susceptible to time changes in its life cycle as is the gonococcus it is but natural that there should occur cases wherein the incubation period would be greatly prolonged. Culturally almost any variation can be produced; the lag period can be prolonged or shortened, as can be the stage preceding autolysis. It is clinically evident that even with the same strain of gonococci urethræ show the widest range of reaction to the disease so that the course of the infection depends upon the patient and not the particular strain. Briefly, gonorrhea is an individual disease and as differ the food and environment of the causal germ so differ the clinical manifestations.

THE CAUSES OF SYMPTOMS

If, therefore, we are correct in assuming that the objective and subjective symptoms of the disease are dependent upon the liberation of an endotoxin through autolysis or artificial bacteriolysis there should be much in the clinical course that is in accord with the contention. Let us see if this is the case. In doing so we must keep in mind several points regarding the time required for certain clinical responses to occur, viz. (8-10-11-12-13):

1. It requires from four to twelve hours for the establishment of a purulent discharge after the urethral injection of gonotoxin.

2. Such an inflammatory response lasts from twenty-four to forty-eight hours.

3. It almost invariably takes at least seventy-two hours for the establishment of an urethral discharge when gonococci are first inoculated directly upon the urethral mucous membrane.

It is also well to bear in mind that gonotoxin does not desensitize the urethral mucosa but, on the contrary, seems to make it definitely more sensitive so that much smaller quantities are required to bring about an inflammatory response.

As has been stated, pus retained in the smaller mucous channels undergoes a bacterial and cellular disintegration. It consequently should be rich in gonococcal toxins, as there is practically no absorption from these diseased glandular structures, and if liberated into the quiescent urethra should produce a purulent discharge within twelve hours if our contention is correct. Singularly enough, this is exactly what happens when one massages a gonorrheal prostate or opens an urethral crypt by massaging it upon a sound. Equally significant is the fact that, despite the presence of gonococci, most of such recrudescences of discharge subside into comparative inactivity within forty-eight hours, as is the case with the response of the normal or gonorrheal urethra to the artificial introduction of gonotoxin.

It was shown years ago by Finger and others that

in artificial superinfection of a latent gonorrhea it always took "more than forty-eight hours" for the appearance of discharge after the inoculation of the germs directly to the urethral mucosa (27-28-29). In other words there was, even in the quiescent gonorrheal urethra, an incubation period at least four times as great as that required for the appearance of the discharge after digitally emptying a gonorrheal pocket rich in gonotoxin into its owner's urethra. This time element is also much in evidence in the study of epididymitis, for it is a fact easy to demonstrate that the acute symptoms begin usually within twelve hours of some definite clinical factor that causes the transference of gonorrheal products to this tubule. The same is true in involvement of the posterior urethra following some errors of treatment or indiscretion on the patient's part. In both of these complications the symptom responses are so immediate that they cannot be due to bacterial penetration of the mucosa and are obviously true toxin responses at the outset. The presence of gonococci in the second glass of urine during the first twenty-four hours of acute posterior urethritis does not void such a view because the viable gonococcus accompanies the toxin as it does in anterior flareups from the emptying of retained pus.

The gist of the argument is that we must abandon the thought that the discharge occasioned by untoward events during the course of gonorrhea are due to reinfection in quiescent mucous surfaces. As a matter of fact, superinfection with a homologous strain is not such an invariable possibility and could not cause a response within the twelve hours required for the former reaction (29-30).

The recurrences of urethral discharge following sexual indulgence or excitement differ in no way from those due to the digital emptying of retained pus and are probably due to either pressure evacuation or the sudden increase of glandular activity that is physiological to this state.

The reactions following the drinking of alcoholics may be due to the same causes or may be dependent upon a sudden destruction of bacteria in the deeper tissues with a consequent liberation of their toxins. Considering that they follow the same clinical lines as the foregoing, the supposition is at least warranted.[1]

OTHER TISSUE RESPONSES

If we keep in mind the ground covered and think of each little intercellular collection of gonococci as a culture it is not hard to follow it through its various vicissitudes.

Despite the fact that this tiny culture has reached its ideal habitat it is the victim of much that is inimical to its longevity and, unless it is fortunate enough to have reached the submucosa of one of the smaller mucous channels, its career is generally not a long one. There are at least four processes against which it must contend. It must, to live long, survive the bacteriolytical and bacteriostatical powers of the tissue fluids, it must hang on against a virtual tissue diarrhea toward the free surface of the mucosa and it must escape the phagocytic action of the polymorphonuclear leucocytes.

Bacteriolysis and bacteriostasis are, in a large sense, individual and are what we call resistance. They are undoubtedly the main factors in the cure of gonorrhea and not our injected antiseptics and we help in the cure only in so far as we aid them.

The tissue diarrhea is a constantly decreasing factor and the phagocyte is a scavenger and little else. It removes the bacteria on the surface and immediately beneath it but does not annoy the deeper lying ones that perpetuate the disease.

It is clinically evident that these four conditions work at their best only where free surface drainage is at its best. They are slight or practically nil if there is no opportunity for surface drainage such as is the case in blocked prostatic acini or urethral follicles. In these structures the gonococcus tenaciously hangs on long after the free surfaces of the urethral mucosa have rid themselves of infection.

Reasoning from these premises there must be, in the early stages of gonorrheal urethritis, rapid growth and rapid destruction of the gonococcus. In this it is probable that the production of gonococcal antibodies plays a minor part if any. It is much in evidence that this process is not an early one in the urethral mucosa and in some few patients is almost absent.

Upon the advent of an acute epididymal infection the serological studies show an enormous increase in antisubstances. These often are so potent as apparently to bring about a condition of practical bacteriostasis in the urethral infections so that the rapid growth and destruction suddenly ceases and the discharge subsides or disappears until such time as the lessened absorption from the epididymis causes the decrease in antibody formation and allows the growth to flourish again. At no time during the course of the epididymitis does the antibody formation reach a stage wherein it kills all of the urethral bacteria. It is more likely that the antagonistic reaction during this stage is merely one of bacteriostasis and that this action is not sufficiently prolonged or complete to entirely check the proliferation of gonococci, so that all of those present complete their life cycle and autolyze. It is likewise possible that, during this stage of comparative urethral quiescence, gonococcal viability is maintained through the development of more resistant elements as is seen under cultural conditions that are almost but not quite ideal, as has been previously mentioned.

In explanation of the clinical picture of the disease one is compelled to consider both bacteriostasis and bacteriolysis as conditions rather closely allied. From cultural experiences we know that very slight changes

[1]There is however another possible explanation of the processes whereby the urethral discharge increases after the drinking of alcohols which may also explain some of the other singular features of this disease. It has been experimentally shown that alcohol in quantity retards or checks phagocytosis (Rubin, Jr., *Infect. Dis.* 1904, 1, 425. Hamburger, cited by Kolmer, *Infection, Immunity and Specific Therapy* p. 130). It would seem that anything that checked phagocytosis in the sensitized urethral mucosa would subject its superficial layers to an increased amount of gonotoxin, particularly if it in any way increased bacterial destruction, as it is here that phagocytosis occurs in gonorrhea. It may be that phagocytosis is one of Nature's methods of protecting the epithelium from toxins. This function is in a measure suggested by the cited fact that the leucocyte preserves the germ from lysis for a much longer time than is required for its escape from the properly draining urethra.

Such a function would square well with much of our other evidence and may entitle phagocytosis to a greater praise than has been accorded it as a curative agent. On the other hand such a function may be a factor in the prolongation of the disease by preventing endotoxin liberation in quantities sufficient to stimulate earlier antibody formation. The fact that the urethral mucosa is a poor absorbing surface in health and worse in disease may likewise enter into this and throw the entire responsibility for such stimulation upon the smaller number of bacteria in the submucosa and beyond.

make for a slow, struggling growth and let them be ever so little more and the bacteria are quickly destroyed. With a bacterium so easily influenced by even the slightest changes in food it is not difficult to see how such changes could occur in the tissue fluids and their effects could range from a slight retardation of reproduction through the various changes to slow or rapid germ destruction.

Such is what we call resistance and upon its countless variations depend the vagaries of the disease. As this resistance increases or diminishes, so change the duration and manifestations of gonorrhea. There is no true immunity in the urethral mucosa; it is a territory ever open to invasion; an invasion in which the contending forces are usually so evenly matched that the struggle is seldom a short one. Each side has its periods of triumph but in the male, at least, the final outcome is almost sure to be the complete rout of the offending invaders.

SUMMARY

1. The general understanding of gonorrheal urethritis in the male is more blurred than any picture in medicine.

2. There is urgent need for a better interpretation of our known clinical and laboratory data, for we have followed more false and foolish trends in regard to this disease than any other common ailment.

3. No disease has equalled it in therapeutic will o' the wisps and volumes could be written upon the foolish things that have been done.

4. As we analyze carefully the available knowledge it is found possible to recast the picture to conform more nearly to things as they are. These newer interpretations also furnish us with a far better working basis for treatment.

5. The disease in the male tends to follow a more clearcut course than almost any other mucous membrane infection.

6. The pathological picture is quite complete and offers much argument against the generally accepted thought that, we cure the disease by the direct bacteriocidal action of our various forms of treatment.

7. It is obvious that the patient really cures his own gonorrhea and that we help only in so far as we encourage or stimulate his curative processes.

8. The manifestations of gonorrhea are true toxin responses and occur only upon the liberation of the bacterial endotoxins through gonococcal disintegration.

9. The incubation period therefore covers the periods of transit, tissue penetration, luxuriant growth, germ destruction and the time required for the suppurative responses after the toxin liberation.

10. A study of the time required for these responses shows that what we have called reinfections are merely the toxin responses of a sensitized mucous membrane. The time required for the evidences of reinfection is at least five times as great.

11. The exudation of serum and the hypersecretion of urethral seromucus are Nature's best early curative agents.

12. Phagocytosis is a grossly overrated process from a curative viewpoint. It is confined to the superficial epithelium and the urethral lumen, being practically nil in the more deeply placed gonococcal colonies.

13. The formation of tissue antisubstances is the body's chief means of curing the infection. This process is good where tissue drainage is at its best and almost nil where drainage is interfered with.

14. These antisubstances are rather slowly developed in most individuals. Their formation can be encouraged and with even more ease it can be entirely obliterated. They range from the feeblest inhibitors of gonococcal proliferation to rapid bacteriolysins.

15. A knowledge of these things, together with the fixed habits and tissue predilections of the infecting organism are essential if we would understand and properly treat one of mankind's worst scourges.

The author's references will appear in his reprints.

Perforation of the Gallbladder with Intraperitoneal Hemorrhage

Report of a Case

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Rupture or perforation from within constitutes one of the few surgical emergencies of the gallbladder. It presents a picture difficult to diagnose, yet demanding early recognition and intervention. The condition is most frequently mistaken for perforated peptic ulcer and the correct diagnosis made when the bile tinged peritoneum or peritoneal exudate is seen. The symptoms of shock, hypochondriac pain, and physical signs of upper abdominal peritonitis almost invariably direct the surgeon's attention to the correct region.

The following case is reported for the unusual physical findings and the unique complication of intraperitoneal hemorrhage from ulceration of the cystic artery.

Case.—Mrs. M. D., a widow, white, aged sixty-three, was admitted to the Jersey City Hospital, January 17, 1925, complaining of severe abdominal pain most marked in the left lower quadrant. A satisfactory history was not obtainable on admission due to the patient's poor condition. It was subsequently learned that for ten years she had had intermittent attacks of socalled indigestion, manifested by gaseous belchings, acid regurgitations, nausea, and rarely severe epigastric pain and vomiting. These attacks occurred most often after meals. "Stomach

upsets" had been frequent for the past six months and she had lost fifty pounds in weight. Occasionally she experienced a dull pain above the umbilicus which rarely became severe.

Four days before admission the patient had severe generalized abdominal pain with associated nausea. She took several cathartic pills without result. She was awake all night with pain of sufficient severity to cause her to cry out, and had persistent nausea and vomiting. Her abdomen began to swell, and despite taking a heavy dose of castor oil, she had no bowel evacuation. Her condition remained the same until the day before admission, when her abdomen became more swollen and the vomiting more persistent, although the pain lessened. On January 17th, the patient became extremely weak, vomiting became black and odorous, and the patient was given medical attention for the first time when the ambulance was summoned. There was no history of chills, fever, or definite localization of pain.

Her history was otherwise irrelevant. She had had no severe illnesses or symptoms except shortness of breath on moderate exertion, with tachycardia. There were no familial diseases.

PHYSICAL EXAMINATION

Physical examination showed the patient in such severe pain that her attention could not be held. She was vomiting "coffeeground" fluid freely. Her body and extremities were covered with a cold sweat, and the rectal temperature was 99.0°. Her few remaining teeth were in poor condition and the gums soft and spongy. Cursory examination of the chest showed no abnormality, and except for a few moist râles at the base, the lungs were clear. The left heart border was eleven centimetres to the left of the midsternal line in the fifth space and a blowing systolic murmur was heard. The pulse rate was 140, and of fair quality. The abdomen was distended, especially in the left lower quadrant, where the generalized tenderness was most severe. A tympanitic note was present throughout the abdomen, except in the flanks, where there was dulness. There was no pigmentation about the umbilicus. There were no points of acute tenderness over the appendiceal, gallbladder, or epigastric regions, nor was there localized rigidity. Rectal examination revealed nothing except ballooning of the rectum. There was fullness in both fornices on vaginal examination. A white blood cell count was twenty thousand with eighty-five per cent. polymorphonuclears.

DIAGNOSIS

From the history, examination and data available, a tentative diagnosis of intestinal obstruction was made and immediate operation advised.

OPERATION

A left lower pararectus incision was made under ether anesthesia. The peritoneum was found discolored. On opening the abdomen a definite ileus was observed, but there was no great bowel distention. Free and clotted blood filled the abdomen and pelvis. The pelvic organs were normal except for senile changes. Palpation of the entire colon showed no growth or obstruction. The spleen was intact. Both kidneys were normal in location and contour. The stomach was normal. When the gallbladder was palpated, the exploring hand withdrew about ten faceted stones of varying size. The true condition was then recognized and the wound closed in layers, in the usual manner.

An upper right rectus incision was then made after the manner of Robson, and the gallbladder exposed. The liver was small and sclerotic. It was observed that there had been no attempt made by the omentum to wall off the ruptured gallbladder, and that the site of the rupture was not at the fundus.

The perforation was then sought and found at the neck, opposite the ampulla. Pressure on the gallbladder caused extrusion of blood and stones, and it was seen that the site of perforation included the cystic artery, which was still bleeding. The gallbladder was opened at the fundus, and about 200 stones of varying sizes removed. The common duct was not obstructed.

Because of the very poor condition of the patient, it was deemed best to terminate the operation, and an angled clamp was placed at the neck of the gallbladder below the site of rupture. Another was placed along its hepatic attachment to cut off the circulation and induce sloughing. A gauze pressure pack was then placed under the neck of the gallbladder and a cigarette drain run to the common duct. No pus had been seen in the abdomen. The wound was then closed in the usual manner.

POSTOPERATIVE COURSE

The patient was returned to the ward in poor condition and reacted slowly from the anesthetic. Free drainage of bile was present the following morning. She continued dangerously ill and pulmonary edema was present to a marked degree. Heart beats were feeble and the abdominal distention was marked.

Her condition remained very critical until January 21st, three days postoperative, when the pulmonary edema was overcome. The cigarette drain and clamps were removed, but the gauze pack left undisturbed. There was free bile stained drainage present, nonpurulent, but examination of a stool indicated that there was no obstruction in the common duct.

On the fifth day postoperative, the clips were removed from the lower abdominal incision and four inches of gauze packing were removed from the gallbladder region. The patient's condition was only fair, and a hypodermoclysis of 1000 c.c. of saline was given. On January 28th, all of the packing was removed and the next day all sutures were out. Her condition was quite satisfactory.

Convalescence continued uninterrupted, and on February 6th all drainage had ceased. On February 12th the wound was clean and dry, and on the 24th, the patient was discharged as cured.

PATHOLOGICAL REPORT

The pathological report on a piece of tissue taken at the operation was "chronic productive and acute hemorrhagic cholecystitis, and cholelithiasis."

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Differential Counting With the Counting Chamber

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In a preceding article (1) the history of differential counting by means of the counting chamber and my finding a satisfactory combined diluting fluid and differential stain, have been dealt with. In the series of articles to follow I will deal with the facts in detail that an extensive study of the blood picture of the diseases and pathological processes commonly met with in medical practice, such as I have found it with the hemocytometer, according to the technic I have already presented With the simplicity and accuracy thus obtained, I have been able to gather together much of the mass of adversity and uncertainty that long has existed about the differential count and bring out a number of new points that, it is my belief, will help materially in the direction of making the laboratory stand more alone in the diagnostic question.

PRESENT STATUS OF THE DIFFERENTIAL COUNT

Outside of a very limited number of well defined diseases and pathological processes, such as the leucemias, whooping cough, smallpox, bronchial asthma, tuberculosis and malaria, very little of diagnostic importance has ever been claimed for the differential count. In the broad field of infections and febrile conditions, manifested generally by a leucocytosis, or a rise of the white count, we have been taught to look upon this rise as being due principally to an absolute increase of the polymorphonuclear cells alone. While it is conceded (2) that other cells are also involved in increased counts, at times, little attempt has ever been made by authorities to classify those infections or conditions of which the increase represents more or less all of the cells usually represented in the blood and those of which the leucocytosis is strictly a polymorphonuclear increase. Furthermore, little classification that can be depended upon has ever been made of the low counts or the leucopenias, eosinophilias and lymphocytoses.

Such classification has been out of the question, because the slide method of differential counting has not furnished a ready means of accuracy (3) through which it has been possible to detect the necessary degree of increase of the different cells of the blood. One or two hundred cells per c.mm. above high normal is considerable of an increase for such cells as the lymphocytes and the eosinophiles. However, such an increase would not have much of a bearing upon the percentage scale commonly in use, in differential counting from stained films. It is very much the same problem as attempting to gauge the temperature with a thermometer with which it is only possible to register five or ten degree variations, or to weigh ounces upon a scale that registers only pounds.

WHAT THE HEMOCYTOMETER HAS REVEALED

The hemocytometer, however, has revealed to me that not only are all of the white cells commonly represented in the blood frequently increased in high counts following infection, but that they are specifically increased in such a manner that a classification can at least be made of those infections and pathological conditions, generally represented with a leucocytosis, into a class of which the polymorphonuclear cells alone are increased and a class of which the increase represents one or more of the other types as well.

With the possibility of this classification, all has been gained that is really necessary in most instances to enable the physician or surgeon to locate the seat of infection. This may seem rather a broad statement at first thought. However, in consideration of what either the physician or the surgeon can always reveal through his physical examination and inquiry into the clinical history, if he can be told that the trouble is not among the diseases or pathological conditions of this class of infections, but must be found among the other, there are very few instances in which he has not received all the information he needs.

CLASSIFICATION OF THE COMMON LEUCOCYTOSES

Just how the process of chemotaxis is involved in this is hard to say, but it seems that it is not so much the character of the infection, in most instances, that determines the nature of the leucocyte response, but rather the location of the infection. The toxines produced by the Bacillus typhosus in the intestinal tract produce the well known condition of a leucopenia; while subcutaneous injections of the same organism produces a leucocytosis. A staphylococcus infection of the skin produces an increase of all of the cells of the blood commonly present, including the eosinophiles, while the same infection in the form of abdominal peritonitis appendicitis or infection of the uterine cavity would be represented by an increase of the polymorphonuclear cells alone.

ABSOLUTE POLYMORPHONUCLEAR LEUCOCYTOSIS

It seems that sources of the body from which the route to the circulation is most direct and where the rule of an infection is to rise rapidly and a considerable amount of toxic material has the opportunity to be taken into the blood before there has been time for much associate secondary lymphatic involvement to take place, the leucocytosis will consist of an increase of the polymorphonuclear cells alone. The organs and tissues of the body of which this is most strikingly true consists of the abdominal peritoneum, the appendix and the intestinal tract, the uterine cavity and the pericardium. To a lesser extent may be added the pleural cavities, the gallbladder and bile ducts. Furthermore, the action of such severe poisons as bichloride of mercury and phenol and the toxins of tetanus, streptococci in the blood, eclampsia and uremia give rise to a striking polymorphonuclear leucocytosis. Again, direct and severe shock to the brain and nervous system, such as follow skull fracture, concussion of the brain and traumatic amputation of limbs, gives rise to a

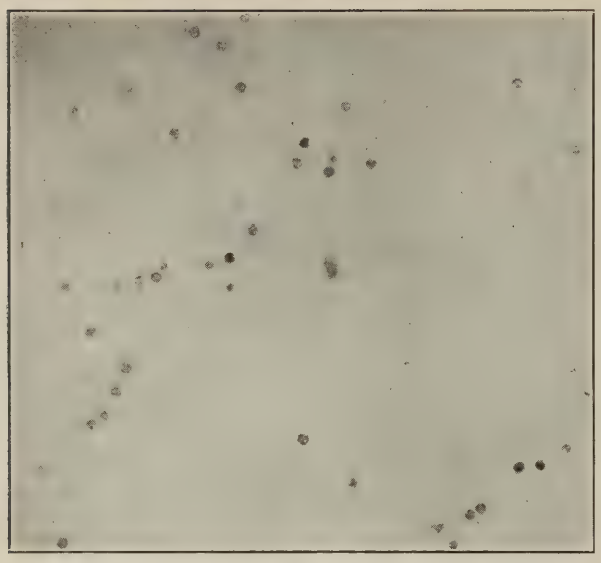

Fig. 1.—Low power field on counting chamber with combined differential stain and diluting fluid. Dark cells are eosinophiles and the light are polymorphonuclear leucocytes. Lymphocytes do not photograph.

Fig. 2.—High power field on counting chamber with combined differential stain and diluting fluid. Dark cells are eosinophiles, and the light are polymorphonuclear leucocytes. Lymphocytes do not photograph.

distinct increase of the polymorphonuclear cells alone. The following diseases and conditions may be expected to be represented by an absolute polymorphonuclear leucocytosis, if not complicated with conditions of the opposite classification.

Acute appendicitis and abdominal peritonitis, strangulated hernia, intestinal obstruction, intestinal and gastric perforation and ruptured ectopic pregnancy, infection of the uterine cavity, following abortion or retained membranes, acute infectious endocarditis, tetanus, bichloride of mercury and phenol poisoning, skull fracture, concussion of the brain and traumatic amputation of the limbs, eclampsia, uremia and, less definitely, acute pleurisy and cholecystitis in the absence of gallstones.

GENERAL LEUCOCYTOSIS

On the other hand, from sources of the body from which the route to the circulation is not so direct and the rule for an infection to rise less rapidly and associate secondary lymphatic involvement has a greater opportunity to proceed along with it, the leucocytosis will be more or less of a general type; involving the small and large lymphocytes as well as well as the polymorphonuclear cells and at times the eosinophiles. Such organs and tissues consists of the fallopian tubes, ovaries, epididymis, testicles and prostate gland in the male and the entire urinary tract, liver stomach and lungs. Among the tissues and other localities represented we have the skin, muscles, bones, lymphatic glands, tonsils and upper respiratory tract. Another factor that increases the number of lymphocytes and the eosinophiles rather than the polymorphonuclear cells is mechanical irritation to the sympathetic nervous system, such as adhesions, abdominal tumors, gallstones, renal calculi and stone in the bladder, foreign bodies, etc. The diseases and pathological conditions of which a general leucocytosis may be looked for may be numerated as follows:

Acute salpingitis and pelvic peritonitis, acute ovaritis, pyelitis and cystitis. In the male, besides the infections of the urinary tract, we have acute orchitis, epididymitis and prostatitis; also such infections as furunculosis and most other acute infections of the skin, rheumatism, osteomyelitis, liver abscesses, carcinoma of the internal organs, secondary syphilis, pneumonia, bronchitis asthmatic attacks, acute throat infections, including diphtheria and those associated with scarlet fever and measles.

It will be noted under the classification of a strict polymorphonuclear leucocytosis are included all of the most threatening and most directly fatal diseases and conditions, while under the classification of a general leucocytosis are included such conditions as are not so threatening and are slower toward a fatal termination. This may be taken as a good rule as to what to expect from the differential count.

CHRONIC INFECTIONS

Little claim has ever been made for the blood count at all in chronic infections by authorities and less is it depended upon generally among the physicians. However, it has been my experience in my work with the hemocytometer in differential counting, that while the total count may reach normal or subnormal figures, in the course of an infection, the differential count remains the same or unchanged as far as the original numerical relationship of the different types of cells are concerned. What is true of the differential count of the two classes of diseases and pathological conditions, in the acute stage, is also true of the same conditions in the chronic stage. Relatively the differential count remains the same, regardless of whether the total count is high, normal or subnormal.

RELATIVE POLYMORPHONUCLEAR LEUCOCYTOSIS

It is apparent that under stress of either severe or prolonged infection, in case of the diseases and conditions mentioned under the first classification of the differential count, the eosinophiles and the small lymphocytes are first to begin to fall in the course of failing leucocyte response and are also more affected finally than are the polymorphonuclear cells are. As a result of this, the relationship be-

tween the polymorphonuclear cells and the small lymphocytes are thrown out of balance and remains so as long as the pathology is operative. If the count is normal as to total number of leucocytes, the polymorphonuclear cells will nevertheless be found to be above normal absolute numbers and that there is a reduction of the absolute number of small lymphocytes. If the total count is subnormal, it will be found that the small lymphocytes have suffered a relatively greater reduction than the polymorphonuclear cells. Of the diseases and conditions of which such a differential count may be expected may be mentioned; failing leucocytosis of severe acute infections, such as gangrenous and ruptured appendix, gangrene of strangulated hernia, peritonitis, endocarditis and infection of the uterine cavity. As to chronicity, chronic appendicitis is practically the only condition in which a relative polymorphonuclear leucocytosis is found. In other parts and in diseases of such other organs as may give rise to such a count in chronicity, the process is usually fatal or has been relieved before this stage can be reached.

ABSOLUTE LYMPHOCYTOSIS

An absolute increase of the lymphocytes alone, as the primary response to infection, is rarely seen excepting in such diseases as lymphatic leucemia, smallpox, early stages of whooping cough,—in the later stages of this disease the polymorphonuclear cells become involved in the increase also—tuberculosis, some cases of syphilis before the outbreak of the secondaries, typhoid fever, influenza and malaria. On the other hand, an absolute lymphocytosis is frequently secondary to all cases of a primary general leucocytosis. It seems that in this classification of infections, the polymorphonuclear cells are more subject to failure of response than are the lymphocytes; consequently, under stress of severity or prolonged infection, all of the diseases and pathological conditions mentioned under the classification of a general leucocytosis may terminate with the differential count showing an absolute lymphocytosis.

RELATIVE LYMPHOCYTOSIS

This type of a differential count represents such counts as are normal as to total number of leucocytes, but of which there is nevertheless an increase of the absolute number of lymphocytes and the apparent normal count is due to an absolute decrease of the normal number of polymorphonuclear cells. Primarily, such a count may be found in typhoid fever, tuberculosis, influenza and malaria; secondarily, it may also be the terminal blood picture of all diseases and processes primarily represented with a general leucocytosis. It is simply a more advanced stage of the same process responsible for a secondary absolute lymphocytosis of the same conditions.

LEUCOPENIA

What is true of increased total counts is also true of decreased counts. The decrease may represent an absolute decrease of the polymorphonuclear cells alone with the lymphocytes remaining normal, or it may represent an absolute decrease of the lymphocytes with the number of polymorphonuclear cells remaining normal, and, like in the case of a general leucocytosis, the decrease may also involve all of the leucocytes commonly present. A classification may also be made of such counts into primary and secondary leucopenias depending upon whether or not the blood picture is that of the beginning of a process or the terminal.

PRIMARY LEUCOPENIA

As a rule a primary leucopenia is represented by an absolute decrease of the granular cells, but it may be represented by a decrease of the lymphocytes as well. In the case of typhoid fever the granular cells alone are involved, and the same is also true when found in tuberculosis and malaria. However, in severe cases of influenza both the granular cells and the lymphocytes may be involved and the same is also true of pernicious anemia.

SECONDARY LEUCOPENIA

Such blood pictures simply represent the terminal condition of either severity of infection or prolongation of the process and may apply to all of the diseases and pathological conditions mentioned under an absolute polymorphonuclear leucocytosis, and, likewise, to those mentioned under a general leucocytosis. In case the former was the primary blood picture, the leucopenia will be of the class of which the decrease represents the lymphocytes; while if the latter was the primary picture, the leucopenia will be of the class of which the decrease represents the granular cells or both. Clinically, a secondary leucopenia is not an encouraging condition, for it represents depletion or failure of the normal leucocyte response. In the more severe types of infection, it is the forerunner of fatality and in the less severe infections it means poor resistance and loss of the patient's reserve.

STATUS OF THE LARGE LYMPHOCYTES

Probably no other cell of the blood has stood so much in obscurity as to clinical significance as the large lymphocyte. It is normally present to the extent of fairly constant absolute numbers and may be found in increased numbers in every form of acute and chronic infection, but, excepting in such diseases as the leucemias, smallpox, whooping cough and malaria, with little regularity in any infection. Through what I have observed with the counting chamber, however, I have been able to gather a number of facts about this cell that I believe will shed some definite light upon its clinical significance. Through closely observing it in hemocytometer counts, over a period of five years, both in the hospital and in my own laboratory, it has been my experience that the large lymphocytes increase in a definite manner in response either to severity of infection or to chronicity. The rise of the normal absolute number of these cells in the blood invariably points to a beginning break or failure of the normal leucocyte response, either under severity or prolonged action of toxins or specificity.

This accounts for the irregularity of its increased numbers in the blood in any specific disease or pathological process, excepting those mentioned above; for the point at which the characteristic break in the normal leucocyte response, in the course of infection, is never the same in different individuals and is bound to be considerably varied also for a great many other reasons.

(To be concluded)

The Sanitary, Medical, Social and Moral Aspects of Birth Control*

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Perhaps I should apologize for appearing before a purely medical audience to discuss a subject which would most likely be better treated by a specialist in diseases of women, an expert sanitarian, or a political economist. I know that not a few of my colleagues who honor me by their friendship, have often wondered at my interest in this as yet unpopular subject, and those familiar with my past work have asked themselves whether I have not enough to do in helping to prevent the spread of tuberculosis and treating the many unfortunate sufferers from this disease. I can only reply that it is through more than a quarter of a century's practice among these very sufferers from tuberculosis, the rich and the poor, in palatial homes and humble cottages, in dark and dreary tenements and overcrowded hospitals, that I have become convinced of the danger to individual and public health from thoughtless procreation, and last but not least of its utter immorality. And most of my experience has been limited to this one disease of the masses—tuberculosis—only.

The tears and sufferings I have witnessed when I have had to decline help because it was too late to prevent, the despair of the poor, frail mother at the prospect of another inevitable confinement, and later the sight of a puny baby destined to disease, poverty, and misery, has made me take the stand I am taking today.

The prevention of conception in a tuberculous mother actively ill, is advised today with, I think, few exceptions, by all tuberculosis workers, and it is my firm conviction that its practice has had its part in the constantly falling death rate from this disease during the last twenty-five years.

The importance of birth control considered in its sanitary, medical, moral, social, and economic aspects, is coming to be more appreciated, and wise laws concerning it should be helpful to the physician in his high calling to keep the mind and body of his patients in the best possible condition. The laws enacted in some states, however, which forbid giving contraceptive information even by physicians, cannot well be called wise and sanitary for neither sanitation nor medical science is furthered thereby. If these laws did not exist, I venture to say that we would have less infectious diseases, particularly venereal diseases; we would have less tuberculosis, and less diseases among children; for birth control, judiciously exercised, as has been demonstrated in other countries (Holland, New Zealand, and Australia), would lessen congestion and overcrowding. Families would be smaller and the breadwinner of the family could provide better care, better food, and better hygienic conditions in general for fewer children.

An illustration may be taken from my personal experience. In all my private cases, when taking the history of a patient, I have made it a practice for years not only to ask about the hygienic conditions—whether he has his own bed and his own room, whether there are any and how many windows in his bedroom, whether the windows lead to an airshaft or to an open street, etc.—but I ask also how many brothers and sisters he has or has had, and whether he is the first, second, third, sixth, eighth, or tenth child. Almost invariably in a large family it is one of the later born who contracts tuberculosis. The physiological reasons for this are doubtless the reduced vigor of elderly parents and the worn out condition of the woman after many previous pregnancies. She gives to the later child a heritage of physiological poverty which makes it less resistant to infectious diseases, and particularly to tuberculosis. But perhaps the most important reason for the later born children contracting tuberculosis more readily lies in the fact that with the increase of the family the father's earnings are rarely correspondingly increased. The results are overcrowded quarters, less good food and less warm clothing in severe seasons; and the mother, as already stated, worn out by many pregnancies, cannot bestow upon the later born children that care and supervision she gave to the first born.

How would the teaching of judicious birth control affect the unmarried population? I mean the young man and woman who would willingly enter wedlock were it not for the fear of having too many children. I believe there are hundreds of young men and women, physically and morally strong, who would gladly marry if they knew that they could restrict their family to such an extent as to raise a few children well. But their fear of a large family prevents conjugal happiness to which they are entitled and *ipso facto* prevents the procreation of a better and stronger man and womanhood. The woman sometimes withers away in lonely maidenhood and the man, whose sexual instincts are often so strong that he cannot refrain, seeks relief in association with the unfortunate and often diseased sisters called prostitutes. The result is a propagation of venereal diseases with all their dire consequences. These involve sterility, physical and mental suffering in the man, or sterility in both man and woman, and according to the severity of infection, pelvic disorders, abortion, premature labor, a dead child or one lastingly tainted with disease.

At times, disease does not enter as a factor in the tragedy, but the result is a girl mother and a blasted life, for our double standard of morality recognizes the so-called sin only in our sisters, not in ourselves. Of her, compassionate tongues say she loved not wisely but too well; of him nothing is said at all. He is spotless and virtuous in the eyes of the world and can go through life as if he had never sinned or been responsible for a ruined life or two.

In anticipation of some criticism by well meaning laymen and clergymen I may say right here what I have often said before regarding the prevention of

*Address, part of which was delivered by invitation at a Symposium of Birth Control before the Yorkville Medical Society, October 19, 1925, and read in full before the Medical Association of the Greater City of New York, December 21, 1925.

venereal diseases, illegitimate births, etc. I absolutely agree with those who believe that selfcontrol is the best possible, cleanest and purest preventative. But while this may be easy and possible for some, it is not so for everybody, and our psychologists and psychiatrists are not in full accord about the wisdom of total abstinence from sexual intercourse in full grown men and women. I am not going to discuss this question here, but wish only to state that from a purely sanitary point of view, teaching young couples desirous to marry, the means of contraception, to which they may resort until they are able to support a few children well, would cause a marked diminution in venereal diseases and result in many more happy and successful marriages; not necessarily fewer but surely more well developed children physically, morally, and spiritually. I wish to emphasize morally and spiritually. Recently the warden of one of our largest prisons, after reading the above statement that in the larger families, particularly among the poorer classes, it was the later born child who contracted tuberculosis, expressed the opinion to me that a moral handicap might exist among the later born offenders. The supernumerous youngsters, particularly in the families of the poor, have less care, are less supervised by the overworked mother than the first born and in a sense are often abandoned to the street and to the gang.

In an interesting address, The Unwanted Child Comes Before the Court, by Dr. Van Waters, delivered before the Sixth International Neo-Malthusian Congress, March, 1925 (1), we read the following significant words: "Deliquency in young children is a symptom of deep distress; delinquent children are often unwanted children."

Sanitation means prevention of disease and untimely death. The knowledge of contraceptive measures would be the saving of the lives of thousands of poor mothers who in their desperate efforts to get rid of an unborn and unwanted child, resort to violent and dangerous means to attain this end. The report of a Special Committee on Criminal Abortions, quoted in the *Textbook of Legal Medicine and Toxicology* (Peterson and Haines, Vol. II, page 92), states that "one third of all pregnancies throughout the country end in abortions. This is estimated at not less than one hundred thousand yearly. A large number of these are criminal abortions from which the committee estimated that six thousand women die yearly."

We must of course make it plain right here that there exists a sharp line of demarcation between abortion and the prevention of conception. Dr. Ira S. Wile, when discussing the subject before the American Public Health Association (2), has well said: "The former is life destroying, the latter is life saving. The interruption of pregnancy to destroy a developing ovum entails physical hazards to the woman which often adds to the mortality rate. At the same time, this is the destruction of life, feticide, literally speaking, infanticide." Knowledge of contraception, imparted to the married woman, may not only preserve her own life and health, or prevent her from invalidism, but it is most likely also to add to the happiness and social and economic wellbeing of the family.

Among the diseases which may be aggravated or cause death in case of an additional childbirth, we must mention serious heart disease, diabetes, tuberculosis, syphilis, leucemia, hemophilia, general debility, epilepsy, the various psychoses, and uncontrollable vomiting, particularly when as a result of previous pregnancy a therapeutic abortion had been performed. Prevention of conception should be imperative in a case of a malformed pelvis when a Cæsarean section or craniotomy had been performed because of previous pregnancy. All this comes under the heading of preventive medicine.

Scientific prevention of conception has not been, and to the best of my knowledge is not now, taught even in our best medical schools, with the exception of the Medical Department of Johns Hopkins University, which has offered each year for the last three years one comprehensive lecture on birth control to a group of elective students.

Concerning the great lack of study of contraceptive methods, I like to quote the following information given by Dr. Robert L. Dickinson: "Finding that no organization was willing to make the study concerning contraceptives, a selfconstituted group, chiefly made up of well known New York physicians, started, in March, 1923, an inquiry into birth control, sterility, and of sterilization of those whose progeny constitute a social menace. Researches are under way looking toward determination of long term methods that do not present the handicaps of present measures." Dr. Dickinson is the secretary of the Committee on Maternal Health with offices at 370 Seventh Avenue, New York City. Its first report has already appeared (3). I have the assurance that our powerful American Medical Association will be helpful in spreading such knowledge as may be obtained through the work of this committee. In a personal letter recently received, the editor of the *Journal A. M. A.* said: "We hope from time to time to give attention to original investigations or reports of new studies in the field of contraception." It is to be hoped that as a result of the studies of the Committee on Maternal Health new special birth control clinics, where physicians can receive proper instruction, will be established.

The opponents of birth control claim that disease and misery, mental and physical suffering, are far greater when conception is interfered with than when Nature is allowed to run its course. To this let me answer that it has been proved that the physiological effect of voluntary parenthood is not only less disease in general and less venereal disease in particular, but a stronger and physically and morally better man and womanhood. In Holland, where the medical and legal professions have openly approved and helped to extend artificial restriction of the birth rate, the health of the people at large, as shown by its general deathrate, has improved faster than in any other country in the world. Although there are no official birth control clinics in Holland, physicians are allowed, by royal decree, to teach judicious and ethical means of contraception. At a recent eugenics congress it was stated that the stature of the Dutch people had increased more rapidly than in any other country—the increase being no less than four inches within the last fifty years. According to the Official Statistical Year Book of the Netherlands, the proportion of the young men drawn for the army over

five feet seven inches in height has increased from twenty-four and a half to forty-seven and a half per cent. since 1865, while the proportion below five feet two and a half inches in height has fallen from twenty-five per cent. to under eight per cent. Concomitant with this increase in stature, the deathrate has decreased more rapidly than the birthrate and there is still a normal increase in population. The families of the poor have fewer but better children, and what is most interesting to observe is that the families of the well to do in that country are not nearly as small as in other countries.

If we contrast Holland with some of the overpopulated countries, we have a graphic picture of the effect on the labor situation. Wherever there is excess of population there is unemployment, be this in Asia, Europe, or America. The standard of living and sanitary environment of the laborer are lowest where labor is cheapest and laborers abound. It reaches its lowest standard in India and China. I have never visited China but have seen the Chinatowns in many of our cities in the West and in the East, and if the lives of these people here are an example of what sanitation is in China, I do not wonder at what an epidemic of any infectious disease means in that country.

It is surprising that in view of our present knowledge of the causes of disease, the danger of congestion, of underfeeding, and the other causes of social misery in men and women, caused by an overpopulation, that there are so relatively few advocates of birth control, which should perhaps be more correctly called conception control, in the medical profession. In fact, among many of our colleagues there exists an outspoken hostility to the movement. They oppose birth control on ethical and moral grounds or believe that there is no danger of overpopulation. Yet I might quote many distinguished American and English clergymen of nearly all the Christian and Hebrew denominations who do not consider judicious birth control immoral, but not to lengthen this communication too much, I will merely give the opinions of two distinguished representatives of the Protestant and Hebrew persuasions.

As recently as June 1, 1925, the Rt. Rev. Bishop Barnes, of Birmingham, England, when preaching before the Royal Institute of Public Health, advocated birth control in the following words: "Human welfare is now menaced by human fecundity. Vast masses are deprived of the uncramped freedom necessary for healthy existence. The change from large to small families is not to be impatiently condemned. Victories in medicine and hygiene may be disastrous for public welfare unless the desire for many children, which is natural and until recently laudable, is held in check."

The Rev. Stephen S. Wise, the senior Rabbi of the Free Synagogue of New York, upon direct inquiry for his opinion on birth control, wrote me as follows: "Viewed traditionally, birth control can hardly be said to be sanctioned by the teachings of the Jewish religion. The position of those of us rabbis who favor birth control grows out of our conviction that it is our duty and our right as teachers in Israel to take a position touching the problem of birth control, because since the Bible canon and rabbinical code were closed we have come to have new light upon some of the most important problems of life. I accept the evolutionary hypothesis and as a collateral implication I accept the viewpoint that birth control is a necessary factor in present day life. The business of religion is to improve man and to better the social order which is his background. I accept the teaching of the scientists that in order that there may be a better, finer race, and in order that the social order may be increasingly livable, it is become necessary to accept birth control as a factor in the social life of man. As a Jew, I feel particularly justified in taking this position because the religion of Israel holds human life to be sacred. The sacramental attitude toward life appears to me not to dictate that there shall be an illimitable and unchecked generation of life, but that humans shall will to give life to children only when they are fitted to be the bearers of life and to give to children such background as gives the fullest chance of life worth living."

In addition to these strong statements by high ecclesiastical authorities I will give an abstract from an editorial in the *Christian Century* of August 27th, perhaps one of the most widely read of American religious journals: "The more intelligent classes already practice birth control, while the less intelligent, who lack the knowledge to restrict their birth, are breeding so prolifically that they imperil the general standards of human excellence of the race. The welfare of society therefore demands that all classes be placed in command of the same information, so that restriction of births may be fairly equal in all classes."

As physicians, sanitarians, and American citizens, do we not all approve of more children among our healthiest, most intellectual, and most moral stock, where there are at present altogether too few? There must be birth release as well as birth control, but to those who cannot see that there is nevertheless danger of overpopulation, I recommend the study of the works of Cox (4), Fairchild (5), Malthus (6), Paul (7), Pearl (8), and Wolfe (9). The last named, Professor Wolfe of the University of Ohio, declared before the American Statistical Association last December that "unless the birth rate is retarded, a few generations at most will see it at the saturation point." Professor Fairchild, after a survey of conditions in both the old world and the new, estimates the population for America as 550,000,000 at the end of the twentieth century, and for the middle of the next century, as many people as there are now on the entire globe.

Raymond Pearl, in his latest book, *The Biology of Population Growth,* while speaking hopefully of that as yet little understood biological phenomenon, "adaptation," concludes by saying: "We can only dimly envisage a small fraction of the changes in the mode of human existence which population pressure will entail. But that these responses to environmental forces will be generally adaptive seems to me certain. They will somehow or other conduce to wellbeing and happiness. Birth control would seem to be a case in point. It is an intelligent adaptive response to an evironmental force, population pressure. It is an attempt to slow the rate of population growth and thereby maintain the level of living standards. It will become more and more widespread."

Indifference or hostility to these questions on the

part of physicians and sanitarians will not further the welfare of the nation. Fortunately, there are always a few brave men among the leaders of the American medical profession who are not afraid to deal frankly with these vital issues. Among the past presidents of our American Medical Association, the late Professor A. Jacobi was, and Professor Charles A. L. Reed and Professor William Allen Pusey are, in favor of birth control. You are all familiar with the latter's wonderful essay on Medicine's Responsibility in the Birth Control Movement (10). From it I will quote that chivalrous sentence referring to the fact that while birth control is truly a man's problem, it is above all a woman's problem: "It is woman that bears the penalties in injuiry, disease, death, and mental torture that are involved in childbirth. She has a right to know how she can intelligently—not crudely and dangerously—control her sexual life. And she is justified by the highest considerations in fighting vigorously and persistently until she has this right granted to her."

The woman of today is demanding the right to use her God given intelligence to decide the number of her offspring and regulate the time of their arrival. No less an authority than Dr. Alexis Carrel, of the Rockefeller Institute, winner of the Nobel Prize for his scientific researches, strongly emphasizes the advantage of quality over quantity in the human race and the utilization of man's brain power for more intensive study toward this end. In a recent brilliantly written article for *The Scientific Monthly* (11) under the title The Future Progress of Medicine, he says: "The spiritual progress of man could be greatly promoted by a scientific knowledge of the physicochemical phenomena which take place within the brain cells. Instead of merely increasing the number of human beings, we could increase their quality. The progress of medicine, understood in this manner, would be the most important factor in the development of civilization."

Alas, laws forbidding a married couple to use their brains in the interest of voluntary parenthood, instead of blind procreation, are still in force in our own and many other states. On the other hand, there is no restriction of the procreation of the unfit. The diseased in body and mind are allowed to reproduce *ad libitum*. The progeny of domestic animals, the horse, the cow, the hog, and others, are controlled by man's intelligence but human beings are indiscriminately procreated.

My late friend and teacher, Dr. Hermann M. Biggs, whom we may justly consider to have been one of the greatest sanitary authorities of our time, prior to the dismissal of the case by Judge Dayton of the Federal Court, against Mrs. Sanger for sending information about birth control through the mail, gave to the press the following statement: "I am strongly of the opinion that the present laws in regard to the governing of infant control are unwise and should be revised. There can be no question in the mind of any one familiar with the facts that the unrestricted propagation of the mentally and physically unfit, as legally encouraged at the present time, is coming to be a serious menace to civilization and constitutes a great drain on our economic resources."

Mrs. Margaret Sanger, the woman who suffered imprisonment and persecution for her advocacy of birth control in its medical as well as sociological aspects, receives an average of sixty thousand letters annually from mothers in distress. Some are from virtually destitute mothers who have too many children already and fear that there will not be enough to feed a new arrival; others are from mothers afflicted with diseases of all kinds, feeling intuitively that an additional pregnancy will aggravate their condition. Federal and State laws make Mrs. Sanger virtually powerless to help directly, except in the comparatively few cases which come to the clinic and in which reason for advice is based on actual disease or when an additional pregnancy would endanger life.

This clinic is maintained by the N. Y. Branch of the American Birth Control League and was founded by Mrs. Sanger. It is under the supervision of two physicians in good standing. No advice is given and no contraceptive help is extended to the healthy married woman or a single woman who desires to marry but for economic reasons wishes to postpone motherhood. Such advice on purely sociological grounds cannot as yet be given without violation of the law. The clinic is conducted on strictly ethical principles, but besides aiding the diseased mothers in the prevention of further childbirths, the institution has another purpose. Just as there exist among the well to do, women eager for children but who are apparently sterile and who by surgical and medical means can be cured of their sterility, so one finds among the poor many seemingly sterile women who are eager for motherhood. In such a clinic they may obtain the same advice and help free of charge as is given to the well to do by expensive specialists, and they may thus have their hearts' desire for a child fulfilled. Physicians in good standing are admitted to the New York clinic for instruction. In a letter addressed to the editor of the *Journal of the American Medical Association* (Oct. 10, 1925), Dr. Robert L. Dickinson, of New York, referring to the work of the American Birth Control League and that of the Committee on Maternal Health, mentions the fact that seven thousand physicians have applied to the League for information on contraceptives. It is thus evident that there is an urgent need of scientifically and ethically conducted birth control clinics in the interest of suffering mothers and also of physicians willing but evidently not sufficiently well instructed to be helpful to them. May our municipal, state, and federal legislators and their advisers in sanitary and medical matters soon awake to the crying need of modifying the existing absurd laws which impede the establishment of these clinics. Because of the incongruity of the postal law which makes all discussions on contraceptive technic and results unmailable, the American Gynecological Society was prompted last May to recommend the following amendment: "Standard medical and scientific journals and reprints therefrom and standard medical works which contain information with reference to the prevention of conception are not nonmailable under this section."

Many people oppose birth control on religious grounds, maintaining that we must not interfere with the laws of nature, which are the laws of God. In that case we must not advocate peace, use intensive cultivation, construct lightning rods, prevent small-

pox or typhoid by vaccination, nor give our children antidiphtheritic serum and not operate for cleft palate or other congenital deformities. We must allow a pus filled appendix or an extra uterine pregnancy to take their natural course, which means death. We must never perform Cæsarean section but allow mother and child to die rather than prevent nature taking its course. The prematurely born child must be left to cold nature and not be put in an incubator with artificial warmth to preserve its existence. If we must not interfere with nature at all, we are not even entitled to artificial teeth which prolong our lives, enabling us to masticate our food properly. In many instances it is our duty to interfere with nature's course, not only in our own interest and for our preservation, comfort and happiness, but at the same time see that all those blessings may also be bestowed upon future generations.

In conclusion, let me touch on a subject which is somewhat difficult to classify but which, I believe, nevertheless belongs to preventive medicine for it relates to the prevention of a pathological mental condition in many married men and women, particularly in the women, which for want of a better name we call anxiety neurosis. It is the fear in the minds of the married couple who already have enough children of the arrival of more little mouths to feed, that causes this condition. Our relatively new science of psychoanalysis has traced to this fear many a severe nervous and mental condition, resulting even in typical insanity. At times there is added to this neurosis the nervous strain coming from an endeavor to repress the sex urge, which makes this mental suffering even more serious. Yet, all married men and women who are in the prime of life are entitled to the fullest conjugal happiness. With the knowledge of birth control they may enjoy this; lacking this knowledge, there are cases where the fear of too frequent childbirths on the part of the already overburdened wife, makes her frigid to the husband's embraces and disastrous consequences ensue. The ignorance concerning contraceptive measures results in wrecking what would have been a truly happy marriage with a few lovable and healthy children.

It has been said that a general knowledge of birth control would lower the moral standard of the unmarried. In answer to this, I may say that a good many people who are unmarried and are eager for illicit intercourse already know preventive measures; but the saving of thousands of lives, the bringing into this world of only wanted and welcome and not unwanted and unwelcome children, the many more happy married young couples, the prevention of venereal and other infectious diseases, would make up a thousand fold for the isolated cases where resort was had to contraceptive measures by those who, according to our standard of morality, should not be entitled to them.

We look upon our presidents of the American Medical Association, who are elected by approximately ninety thousand American physicians, as the standard bearers of all that is scientifically, ethically, and morally sound in medicine; so, if we subscribe to what Dr. Pusey has said concerning the morality and ethics of birth control, we cannot go far wrong. This is what he said in the above mentioned address: "Adequate and satisfactory methods of birth control and widespread knowledge of them, would not only conduce to human happiness and social betterment but would be invaluable influences in favor of sexual morality. They would indeed promote morality in its broadest and best sense."

I referred to the anxiety neurosis created in many married couples because of lack of knowledge how to prevent an undesired conception. In the name of all that is holy and sacred to all physicians, who are supposed to help prevent diseases of mind, heart, body, and soul, can we take upon us the responsibility of denying to such couples the knowledge which will render them healthy and happy and prevent a sure catastrophe? And yet, there are laws in some States of the Union which would punish us for doing so.

Concerning the injustice of and the harm done by such laws, we will finally quote one of our most distinguished authorities on psychiatry, Adolf Meyer of Johns Hopkins (12). Discussing what he calls "The Obligation of Procreative Hygiene" and avoiding all extreme statements concerning the propaganda of scientific and judicious voluntary parenthood, he concludes by saying: "We are urging nothing more than this: that physicians be protected against unjustified prosecution to which they are liable in some States, when they follow their medical conscience in advising married couples who need it with regard to the wisest and sanest adjustment of married life so as to avoid unjustified accumulations of pregnancy and the hazards of any probable ill health of the potential parents and progeny."

Because, some years ago, Anthony Comstock, a well meaning but misguided and fanatical reformer, was instrumental in causing federal and state laws to be enacted which hinder the physician in his duty toward suffering women and forbid him to prevent physically and mentally unfit children from coming into the world to constitute not only a burden but a danger to the community, are we as physicians, entrusted with the physical and mental welfare of the citizens of this great country, to remain idle and indifferent in face of the absurdity of such laws? Not only as sanitarians and physicians but also as men and women, lovers of mankind, we must be in favor of preventing overpopulation which we know has been in the past the cause of aggressive wars, pestilences, and untold human sufferings. Let us arise and demand the revocation of such laws which, by their very nature, prevent the United States from being the leader in human progress, world peace, happiness, and good will on earth.

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Historical Medicine

The Treatment of Stricture of the Urethra in the Sixteenth Century

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Perhaps the earliest essay on the treatment of urethral stricture in the male is that published by John Read in 1588. It is entitled *A Treatise of the Caruncle or Carnositie; growing in the yarde, or necke of the Bladder.* Read says that the author is unknown but that the manuscript was "given me by a gentleman being my patient of a certaine griefe, who being cured, in recompence of my good will, gaue it me, not knowing whether it were a translation out of any author, or a collection of some learned and skilful man."

The treatise begins: "Albeit, ulcers and sores are wont to rise upon divers occasions, not here at this time to be repeated, yet do they come no way more commonly than by the long continuance of the gonorrhea, if it be not orderly and perfectly cured. And of ulcers either neglected or else not well cured certain increasements and unnatural swellings of the flesh which we call caruncles or carnosities, are accustomed often times to proceed." From this it is clear that our predecessors looked upon stricture of the urethra as being due to a growth obstructing the lumen rather than as a narrowing of the passage.

"The signs and tokens of a caruncle either in the neck of the bladder, or in any other part of the urinary passage, are these:

1. A great difficulty or hardness in making of water, the which water having his course readily to the place affected, is stopped and stayed there so much that it cannot have his issue, in any other sort than dropping wise. And that also not without the great help and enforcement of ourselves.

2. And therefore such as are tormented with this disease, whiles they go about to make their water, are constrained in the meantime, at the same instant sometime to avoid their other excrements also.

3. And whiles they chance to do the act of generation, their nature stayeth in the middle way of his course. And being stayed destillethor trickleth from them so faintly, so coldly and with such small delectation and pleasure that, as touching generation, they may be judged unfortunate, and therein to lose but their labour. For it is impossible for the time that any man hath this disease, he should beget any issue.

4. Again when the patient maketh water, in the very water itself, something stayeth beside the caruncle, which cannot well be put forth or expelled, except the root of the yard be pressed hard with the patient's finger.

5. Moreover the urine itself in this case cometh not forth with a direct and straight course, but aslope and in crooked sort either on this side or else on that, yea and sometime it is divided as it were into two streams.

6. It chanceth also oftentimes that the urinary passage is so stopped and choked that the urine, being not able to use his ordinary course and issue, breaketh forth by other ways and in this case nature seeketh wonderful shifts to help herself, for I have known many that have made water between their codds, and some again have done it at their fundament, and other some, out by their flanks and parts called in Latin *Ingume.*

There are two ways of curing the caruncle. The one violent and not without danger, that putting in some instrument of tin or the like we should pull the caruncle up by the roots, in such sort that not only urine, but blood also itself, yea and gobbets also, and fragments of flesh, should be brought forth.

The other way is more gentle and easie, and without all danger, which is not done by violence or iron instruments, but by the operation and working of medicines, and this way the old writers did not know. If then we have a patient in this order troubled his body should be skilfully and sufficiently prepared and evacuated. And in this point the patient must altogether be directed and ruled by some discreet and learned physician. And this once being done then, take a fine tender Mallow stalke, or a smallage or parsley stalk, and anointing it with oil of sweet almonds tenderly and softly to make proof of the neck of the bladder, having good regard that, in no case, you provoke much or pain extremely. But if it chance to stick by the way, so that it either do bend, or offer to break, then it is to be drawen out againe forthwith, and a wax candle must be put in, and that of such bigness as the urinary conduit may easily receive. But for that it may be feared, lest if the candle should break within the yard, as in winter especially it may come to pass for the hardness of the wax, some portion thereof might get into the bladder and either scantily be gotten out again or else should anger and exasperate the parts already painful and exulcerated. Therefore it were to be wished that the candle were made of a strong kind of thread and not only of wax, but of wax and turpentine artificially mixed together. Our candle being thus made, when we have so rebated and blunted the end that it cannot hurt or gall, then we must anoint it with oil of sweet almonds and then something bending it towards the smaller end we must put it in oftentimes into the urinary conduit. And if we perceive once that the candle get beyond the caruncle, which is perceived by the rubbe or as it were a little jump by the way, and by the estimate of length of the portion that is gotten in, then may we think that one half of the cure is obtained.

If it shall fall out that the tumor shall be so hard and stubborn that it will not yiled and give place to the candle. Then may you make a probe or searcher of lead of the same length and bigness. Anointing it with the foresaid oil, so to use it. For lead is

not only an easier and mitigator of pain but also it hath the property and faculty of drying of ulcers. And besides that also, with his very weight it presseth them and causeth them something to stoop and shrink in.

The flesh may chance to be so hard and rebellious, that a leaden instrument shall not be able to master it neither, and then in that case, you must use a silver or a golden catheter or siring. And yet before we do use any such either of silver or gold, my counsel is that you do make trial again and again, by the forenamed means. For the use of this siring hath this discommodity, it being nothing pliant and flexible and hitting upon those most tender and sensible parts it causeth oftentimes great and terrible fluxes of blood, which doth discomfort both patient, chirurgion and physician also.

The patient while he is to be searched is to be placed in some convenient place, his face being upright, and the chirurgion standing on the right side and holding his yard in his left hand, let him put in and direct the instrument with his right hand, and when he is come to the neck of the bladder, then something bending down both yard and instrument, let him fair and softly force it forward into the bladder.

When ye have thus past the caruncles or got beyond them all along the urinary conduits, even to the bladder, then that instrument wherewith you have done the feat, whether it be a candle or the leaden searcher, or catheter must remain, and be left within for one whole day, and the patient must be enforced so to make his water—if the pain be not too intolerable. For by that means partly, by reason of the course of the urine partly by the instrument itself, the water passage will be enlarged and amplified. Your catheter or searcher of lead being drawnen forth after the long tarrying there, if by them your work be perfected so far forth, then must your candle be put in last of all, and suffered there to remain, till such time as it doth receive some print or mark by the compression of the caruncle, and that will be a good help to apply the medicine withall to work the cure. The candle being drawen out, it must be curiously looked upon and viewed, to espy in what part it seemeth to be printed in or compressed.

Since we cannot apply neither lint nor pledget unto ulcers which be hidden in the inner parts of the body, so as we might do if they were in the skin and outer parts, and therefore cannot conveniently apply any plaister either, therefore that commodity is supplied by the wax candle, for the medicine being put thereon, it doth lead it as it were with a line, to the place affected. But the candle must be something hollowed and prettily pared away in that place where the medicine must be placed. Lest if it bear out and be not even and equal, it cannot then get through to the place where the caruncle is.

Provided always, while these things be thus adoing, if any intolerable pain or unaccustomed shivering, or cold, or ague or any other grievous accident do chance to molest and torment the patient, straightways the candle is to be taken out, and the urinary conduit to be washed with goat's milk, or rose water wherein a little camphor is to be mingled, and so long, you must cease all other actions of chirurgery, till such time as all such accident and impediments be removed and taken away.

By these few notes and instructions, any skilful chirurgion may be able to judge and discern a caruncle; and be also sufficiently instructed, by the might and power of God to cure the same. Who as he is wont to punish mankind with innumerable diseases, to the end to abate his pride, and to make him know himself, so is he also accustomed to help and succour those who fly unto him for comfort, and do trust in his mercy."

Although the authorship is unknown the treatise bears all the marks of English surgery of the Tudor period. Its language is so idiomatic that I do not think it has been made to speak English from a foreign tongue. It is clearly the work of a surgeon who has had practical experience in the treatment of stricture of the urethra, for it is not likely otherwise that he would have warned his readers against the dangers of urethral fever. The employment of the candle in the treatment of stricture makes the bougie an older instrument than is generally supposed, whilst the terminal recommendations to God is more in the style of the fifteenth than of the sixteenth century.

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What Did the Indians Know About Medicines and Healing Treatments?

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Just how much did the North American Indian know about drugs and medicines? Were the treatments offered by the ancient medicine men wholly made up of superstition and fetishes, or did the aboriginal inhabitants of this continent have some practical knowledge of healing herbs and animal and mineral drugs? If so, how much did they know, and how exact was their knowledge?

They certainly were not skilled in laboratory practices, nor in accurate information as to therapeutic values, doses, of active principles, and other knowledge which we consider essential today. Occasionally we see a remedy even now promoted on the plea that it embodies an original and valuable formula known to Indian people who used it with success for the healing of various diseases.

Before the misbranding legislation became operative, there was much more of this class of socalled Indian remedies on the market, many of which, without doubt, never were used or originated in any way, form or shape by Indians.

Many of the older people can remember the typical

Indian doctor with long hair, broadbrimmed sombrero, longtailed coat, and a watch chain as big as your thumb, draped across the front of his vest, who appeared periodically, selling Indian medicines from the rear of a neatly painted wagon, drawn by a pair of high steppers, always groomed until they shone like a bottle. That Indian medicine man always was a glib talker. Sometimes he had a little Indian blood, and sometimes he didn't have any, but his makeup was effective. Frequently he was accompanied by an attraction in the form of a singer or a sleight of hand man, or a story teller who helped to get and to entertain the crowd.

An amusing character based on the old time Indian medicine man is to be met in the modern novel, *Oh, Professor, How Could You,* and if anyone wants a good laugh and a chance to forget his own cares, this novel by Wilson will satisfy.

However, because there was so much white man fake in relation to Indian medicines, they fell into disrepute, in the course of time, and came to be looked upon by most legitimate, trained druggists as mere "belly wash."

Just the same, the Indians did have an amazing knowledge of herbs and some other supplies, and their pharmacopœia contains many, many of the supplies upon which we moderns depend for the relief of pain and the prevention of disease. To be sure, their use of these things was in simple and crude forms, while modern laboratory practice has refined and made chemically pure and combined elements with exactness.

But there had to be a beginning somewhere, and the Indians who wandered over the hills and valleys of the American continent, were shrewd observers and very keen in their ability to draw interesting deductions. They noticed particularly the actions of ailing animals, and the traditions of the women of the tribe concerning healing potions were carefully preserved.

In those early days the different tribes or families of Indians prided themselves upon the number and knowledge of their medicine men and women, and these people were looked upon with great respect, even reverence, and had a surprising amount of influence over the members of the tribe.

The medicine men and women gave particular attention to disease, and according to Professor Heber W. Youngken, the usual procedure of these primitive professionals was much along the following lines:

"He (the Indian medicine man) first inquired into the symptoms, dreams, and acts of the patient, whom he examined, and then gave his opinion as to the nature of the ailment. This was generally mythical. He then prayed, advised, or sang to the accompaniment of a rattle, and made passes with his hand, occasionally moistened with saliva, over the part affected. Finally, he placed his mouth over the most painful spot and sucked hard to extract the immediate principle of the illness. This result he apparently accomplished, often by means of sleight of hand, producing the offending cause in the shape of a pebble, thorn, hair, splinter, or other object, which was then thrown away or destroyed. Finally he administered a medicine and often with it a protective fetish.

"The fetishes used included peculiar shaped stones, feathers, claws, lightning riven wood, hair, and pieces of pottery ornamented with mythical animals, representations of the sun, lightning, etc. These were believed to embody a mysterious power capable of preventing disease and counteracting its effects. There were numerous variations of this method according to the requirements of the case. If the case would not yield to simple treatment, a healing ceremony was sometimes resorted to. If all means failed, the medicine men suggested a witch or wizard as the cause. The designation of some known person as the culprit often placed his life in jeopardy. Often, when the medicine man lost several patients in succession, he was suspected by his tribe either of having been deprived of his supernatural power or of having become a sorcerer, the penalty for which was almost always death."

The deaths devised for the unsuccessful doctor were of a terrifying nature, as they felt that these leaders of theirs had deliberately betrayed them. Within the memory of the writer, such a death was dealt to a medicine man of the far East, by means of a barrel filled with spikes projecting into the interior of the barrel. The medicine man was put into this and the barrel rolled down steep hills until life was extinct.

It is evident from the treatment given by the medicine man that he himself was fully aware that part of the process at least was bluff. He knew that the confiding Indian who was injured or affected with disease expected some visible cause to be produced as an excuse for the pain or discomfort. And so to satisfy the patient, the sleight of hand was used to produce something which could be regarded as a contributing cause at least of the distress. The prayer and the use of magic really had their value in distracting the attention of the patient, and in arousing the elements of mental belief in the benefits to be derived. We now know that mind has a decided influence over matter, and the scenery arranged appealed to the Indian and his imagination.

After the stage was set, the medicine which was really to do the business was administered, and lastly the fetish or protective charm was given as a further visible means of keeping the Indian in line and stimulating his cooperation in the treatment.

From this it is obvious that, as Professor Youngken tells us, "Indian medicine of the past has been largely a mingling of charms and herbs."

We must not forget, however, that these people and even many of the old squaws, were thoroughly familiar with herbs and remedies to meet the ordinary ailments, such as colds, coughs, constipation, and other ailments. It was usually when the disease was beyond them that they appealed to the medicine man and expected him to make good. In some tribes of Indians the loss of four patients was sufficient to cause tribal vengeance to be heaped upon the medicine man.

It is stated on good authority that long before America was settled by the white man that the North American Indian was acquainted with different and effective "cough and cold remedies, emetics, cathartics, diaphoretics, vermifuges, astringents, alteratives, stimulants, narcotics, and antiseptics." Without doubt, they had little if any idea how these agents relieved and cured, but they were satisfied to know

that this drug or herb, or that mineral potion relieved the condition which caused the suffering.

Most of the Indian remedies of this early and crude materia medica were of the plant or vegetable kingdom. Roots, barks, leaves, stems, fruits, flowers, pollen, seeds, rhizomes, entire plants and combinations of different parts of different plants were used, both in the fresh or dry state. As a rule, most of the tribes used a single remedy in the medication offered, but some of the more advanced people combined two, three, four, or even five different ingredients.

The forms in which this medication was given are interesting. Sometimes the Indians chewed the barks and leaves, thus making a crude decoction; or again, they steeped and brewed, making teas and infusions. They prepared lotions, and ointments, and liniments for external applications, and plasters enjoyed a high reputation of efficacy among them.

Most of the remedies were of the decoction type, prepared by boiling, although the more subtle infusion made by steeping or soaking was also employed. They had dishes of earthenware and stone, and even beaten metals and dishes of wood and bark were used in the hot ashes with fair success. Liquids were heated either over the coals or over covered heat, or by dropping stones into them.

The Indian medicine man was well paid for his services. Sometimes he exacted his reward in advance, and sometimes he awaited results. The pay was of different kinds, "wampum, moccasins, the best bow, arrows, furs, venison or other food."

Both the medicine men and women were people of wealth and importance, and anyone who defrauded them of their compensation for their services was supposed to be visited by the wrath of unseen spirits. In fact, liberality was one of the ways in which the patient could cooperate for his own best good—or so it was supposed.

Sometimes if the patient was extremely ill, the whole tribe assembled and had a great jollification at his expense. This was supposed to propitiate the gods. Professor Youngken tells of the Mountain Chant practised by the shamans or medicine men of the Navajo tribe.

The people came together and spent nine days carrying out an elaborate program of dances, chants and incantations. The more expensive the feasts and program, the better it was supposed to be for the patient. It would seem as though the Indian needed to be stoical to a remarkable degree when he contemplated paying for such a powwow in addition to giving up his choicest treasures to the medicine man. Whether the Indians had a synonym for profiteers and grafters is not certain.

Our own forefathers, who were pioneers in the wilderness, did not have many available remedies at hand, and they in turn learned the value of many native herbs and drugs from their Indian neighbors. So that in reality we owe these people a debt of gratitude which we should not overlook.

Professor Youngken has compiled an interesting list of drugs actually used by the North American Indian, and doubtless there were many, many others known to the different tribes, and concerning which information has been lost.

The recent trip of Dr. Rusby into the interior of the South American continent has interested all familiar with the possibilities of his discoveries, for it has been recognized for some time that the primitive people of those regions know of native drugs which are strangers to us, and it is further possible and even probable that plants unknown even to the natives hold within their elements beneficent influences once they can be analyzed and tested.

The following is the listing given by Professor Youngken and is of a nature to cause most of us considerable astonishment.

VEGETABLE DRUGS

Balsam of fir.—Externally for cuts and sores; internally for colds in form of decoction of bark.

Milfoil.—As a compress or tea for swellings, earache, and stomach troubles.

Sweet flag.—Employed by all of the tribes as a carminative and by some for colds, fever, toothache, and other maladies.

Maidenhair fern.—In decoction for chills and fever and as a poultice for rheumatism.

Peyote.—This drug, representing the crown of a spineless cactus, is employed by the Plains and other tribes in a religious ceremony. From ten to forty disks are eaten by each participant. The first effect is excitement of the brain which is quickly followed by a derangement of the sight centres, causing a kaleidoscopic flow of colorful scenes of beauty. An excessive dose often causes unpleasant scenes.

Spikenard.—The rhizome and roots were used as a carminative and expectorant or with horseradish root as a poultice in dropsy. The juice of the berries and oil from the seeds were poured in the ears for deafness.

Jack-in-the-pulpit.—The powdered corn was employed externally for headache, rheumatism, and muscular pains.

Virginia snakeroot.—Chewed and spit upon wound for snake bite; bruised and placed in hollow tooth for toothache; the decoction used for fever and cough.

Canada snakeroot.—Used as a remedy for stomach disorders.

Pleurisy root.—Used internally for pulmonary troubles and applied externally in powdered form to wounds and old obstinate sores.

Flowering dogwood.—The bark was used for fever and colds.

Showy lady's slipper.—Used as a sedative in nervous disorders.

Smaller yellow lady's slipper.—A decoction of the rhizomes and roots in which was placed red fleshy stalks of a chickweed was used for worms in children.

Jimson weed.—Used as an intoxicant in initiatory ceremonies, as a narcotic and anesthetic, and in the treatment of wounds and sores.

Canada fleabane.—A decoction of this plant was used for diarrhea, while the ray florets were crushed between the fingers and inserted in the nostrils to cure rhinitis.

Button snakeroot.—Used as a remedy for snake bite and, in combination with blue flag, as a febrifuge and diuretic.

Wahoo.—The decoction of the inner bark was employed for uterine troubles.

(*To be concluded*)

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Chronic Appendicitis

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If it is true that the woman that is the least talked about is the most virtuous, and if we apply this statement to the subject under discussion, then chronic appendicitis is undoubtedly the most maligned of internal diseases. In the work of decades, streams of ink and endless debates have been concerned not only with acute but also with chronic appendicitis. Even by bringing this question before you again I am not aiding in the improvement of the views and the evaluation of chronic appendicitis, especially since I do not offer you much that is new. It is only the fact that we internists and specialists see so many indefinite and doubtful, cured and uncured, cases of chronic appendicitis that has induced me to write on this subject. But there is still another factor: Today we discuss the question of appendicitis in a much more quiet and less heated atmosphere than we did decades ago, when the differences of opinion between surgeons and internists were pronounced and made an agreement difficult.

I shall confine my remarks on this subject accordingly to chronic appendicitis exclusively, and owing to the short space of time allotted to me I shall be compelled to limit myself to a few sidelights, and by omitting the extensive literature and numerous individual questions I will emphasize only the points that are of most importance to the clinician and the physician.

First, as to the question, is there, after all, such an entity as chronic appendicitis? With this question we enter into the midst of the discussion. The pathologists and numerous surgeons deny the occurrence of an originally, that is, primarily developed chronic appendicitis, and recently Aschoff, one of the best authorities on this subject (and also Jul. Schnitzler) has preceded his lecture in an excellent critical review on the present status of the question with the significant title On the Socalled Chronic Appendicitis.

This view is undoubtedly founded on a correct basis. In short, it may be admitted that every case of chronic appendicitis was at some time preceded by an acute forerunner. On the other hand, the experiences of Aschoff, Sonnenburg, Renvers, Kukula, and others, that a pathologicoanatomically and histologically changed appendix is found in advanced age in almost eighty per cent. of all persons, speak in favor of the fact that cases of originally chronic inflammations of the appendix with probably latent or uncharacteristic symptoms are observed clinically. This view is also in a certain agreement with our conventional clinical conceptions of chronic inflammations in other organs. We speak of a chronic gastritis, of a chronic enteritis and colitis, of a chronic pharyngitis, cholecystitis, etc., and admittedly associate with it the theory, that there is a chronic irritation that afflicts the mucous membrane of the particular organ, without denying thereby the possibility of a former acute forerunner. For me it is also beyond a doubt that there are slight painful conditions that pass off within a few days without fever and are limited to the regions of the cecum and the heart, which later on are labeled conventionally with the incorrect diagnosis of irritation of the appendix. Considered from a practical viewpoint, therefore, the question whether chronic appendicitis must be traced to a persistent irritation of the mucous membrane of the appendix, or whether the first insult was an acute forerunner, is, according to my conception, purely an academic one.

Things are different, however, in the primarily hyperacutely developing appendicitis and its consequent chronically developing recurrences. This, as I called it twenty years ago, residual appendicitis, has nothing in common with the course, nature, its whole clinical significance, and, finally, the treatment (I cannot here enter into greater details) of chronic appendicitis. It has its own peculiar appearance diagnostically, prognostically, clinically, and therapeutically.

I now wish to turn to the clinical picture of chronic appendicitis. Leaving aside all casuistic details and in a general review of that large army of truly or apparently sick patients with appendicitis, the statement that a truly characteristic disease picture of chronic appendicitis does not exist must be emphasized. What the patients complain of are always the pains in the region of the right ilium, which are aggravated by active movements and other bodily exertions and relieved by rest, which raise the suspicion of the presence of a slight inflammatory pro

cess in or in the region of the appendix, but a typical disease picture, a typical past history of disease or development of the disease, as it occurs in duodenal ulcer or in cholelithiasis, is not encountered in the disease under discussion. What is especially absent is the demonstration of definite disturbances of function, to which I will return later. How can we arrive at any definite conclusions when we know so little regarding the function of the appendix and when we actually consider it as a functionally unnecessary organ?

In 1905 I called attention to this subject with special emphasis upon the close relationship between chronic appendicitis and colitis in a lecture before the Verein für Innere Medizin. Today, since I have gained considerable experience, I can say that while there are cases in which the subjective symptoms are confined only to the appendix with complete integrity of the colon, they are extremely rare. Whether the inflammatory process is diffuse or is essentially confined to the cecum, whether it runs its course clinically as habitual obstipation with or without a simultaneous spastic attack, whether obstipation alternates with diarrheas, whether the cecum is dilated—whether there is the much discussed typhlatony or not, whether the cecum is movable (cecum mobile) or not—all these are subordinate points of discussion. The important feature, and, as I would like to say at this time, the confusing element in the clinical picture, as well as in the diagnosis and therapy, is the close relationship between the involvement of the cecum and that of the appendix. We internists repeatedly see this relationship in the appendectomy cases. At the same time, according to my observations, the assumption of Kümmel and others, that in cases of appendicotyphlitis, the appendicitis is the primary and the typhlitis, or more generally expressed, the disturbances in the colon, are the secondary factors does not hold. Cases, in which a chronic obstipation or a chronic colitis is cured by appendectomy, are at least among the great rarities. In surgery and in internal medicine the idea that the intestinal symptoms remaining after an appendectomy are attributable to adhesions has for a long time developed into a sort of dogma. I do not by any means deny their occurrence—Haberer has for a long time described a series of such cases—but on the basis of my own experiences acquired in numerous operations, I assert that the adhesions do not play such a controlling part among the sequelæ of appendectomy as is frequently taught and written. A large number of patients after an appendectomy suffer from disease of the cecum, and even before the removal of the appendix have either suffered from it alone or simultaneously with an inflammation of the latter.

Our entire knowledge of chronic appendicitis would probably stand on a firmer foundation, if in the future, as was the case formerly, we would again pay more attention to the cecum. For there is a lasting and lively functional association between the cecum and the appendix in the sense that the influx takes place more readily than the outflow. In the language of political economy the appendix is in a state of passive balance of trade. The inflow exceeds the outflow, and the latter is often almost nil. As a result of this there is the possibility of frictions, irritations, inflammatory processes, thickenings of the mucous membranes, obliterations, hydrops formations, empyemas, and other conditions. At the same time it must not be forgotten that, in contrast to the almost sterile ileum that it is in the cecum that the effects of bacteria first become evident, which naturally also infect the appendix and, as a result of the narrowness of the canal, find an excellent soil for propagation. It should also be borne in mind whether the still active peptic ferments are not mixed with the cecal contents, namely with rapid peristalsis, which may lead to all kinds of effects upon the mucosa of the appendix, which has no powers of resistance in the presence of numerous epithelial defects. I would like to call attention in this respect to the interesting studies of Heile (1) in which the great significance of the existence of noncatabolized food remains, together with the ferments of the small intestine in appendicitis is plainly shown. Although the work of Heile refers only to acute appendicitis, it undoubtedly applies also to the etiology of the chronic forms. However this may be, the close relationships between the cecum and the appendix are not to be denied, and there is also such a pronounced symbiosis in the pathology of these conditions, that a separation of these two, considered from both the biological and the clinical viewpoint, is a mistake.

This hand in hand relationship between typhlitic or colitic with appendiceal processes, results in it being impossible for the disease picture of chronic appendicitis to be sharply circumscribed and well demarcated. Only in the cases in which a simultaneous involvement of the cecum or of the distal portions of the colon can be clinically eliminated, does the thought of a chronic inflammatory process step into the foreground in the presence of lasting or frequently recurring painful conditions in the right ilium. The fact that there are still numerous disagreements among pathologists regarding the limits at which changes in the appendix should be considered as pathological, or still as physiological, contributes still more to our deficient knowledge of the nature of chronic appendicitis. I have already mentioned the fact that we also find changes in the appendix under physiological conditions, namely in elderly individuals.

The marked psychogenic insult, which some cases of true or doubtful chronic appendicitis reveal, is of significance in the clinical evaluation and, as I will show later on, in the diagnosis. The literature on chronic appendicitis is exceedingly rich in such experiences, and even though Liek of Danzig has attached the greatest importance to the spastic conditions of the colon in an extraordinarily valuable treatise on this subject, these are, nevertheless, only the partial symptoms of a general neurasthenia or, to express ourselves in a modern way, the sequelæ of an irritative effect on the autonomous nervous system.

It is therefore evident from the clinically and etiologically but slightly characteristic described disease picture that the diagnosis of chronic appendicitis also must stand upon a weak footing. The very fact that according to various surgical statistics mistaken diagnoses were made in no less than thirty-five to forty per cent. of the cases of appendectomy at operations for chronic appendicitis, indicates that diagnostically we do not as yet stand on firm ground.

Before entering upon this subject more deeply I would like to preface my remarks with the statement that the diagnosis of chronic appendicitis is by no means a snap diagnosis. This is an important point, inasmuch as the opinion prevails among many physicians and also in the public at large, that the question whether a chronic appendicitis exists or not can be decided without difficulty by the single palpation of the appendix region. We can arrive at an absolutely definite diagnosis only by the process of exclusion. This means that we must limit the diagnostic possibilities in such a way by the exclusion of disease pictures presenting other similar symptoms, that only the assumption of an appendicitis remains as the most probable expression of these symptoms. It needs hardly be mentioned that such an excluding diagnosis requires numerous examinations and observations, and frequently also the aid of other specialties.

Of the diagnostic aids that require consideration, the following four ought to be discussed:

In the first place let us consider the much discussed points of tenderness. Of these, as is well known, the McBurney point enjoys a special significance—one can almost say a universal significance.

Furthermore, during the course of years quite a large number of other points of tenderness have also been discovered and recommended for trial: they are attached to such names as Munro, Lantz, Clado, Lentzmann, Morris, and Kümmel. From the critical point of view all these points of tenderness differ little from one another, one often being only a centimetre's breadth to the right or left, or somewhat at a higher or lower level than the other. Hausmann says the following of McBurney's point—and the same applies also to the other points: "A geometrically determined point on the abdominal wall can never correspond to an inconstant point in the abdominal cavity, such as the point of insertion of the appendix." Furthermore, if we consider how many changes of position the cecum, and with it the appendix, shows, it is plainly evident what great mistakes must be associated with conclusions drawn from this or that point of tenderness.

A distinct advance in regard to the better localization of the tender appendix is undoubtedly the procedure of Singer and Holzknecht (2), who determine the seat of the tender area röntgenologically with the aid of the Holzknecht spoon indicator and have thereby taught us to differentiate the regions adjacent to the cecum from other parts. According to my knowledge additional proof of this technic has not been brought forth. It may undoubtedly aid in lending a certain support to the diagnosis, on the one hand, and to disprove it and to direct the attention in another direction, on the other.

Hyperalgesia of the skin is a factor that makes the determination of tenderness extremely difficult, as this may occur not only alone, but also in association with an involvement of the appendix. In every hyperalgesia of the skin, which, as I emphatically remark, may, as such, lead to appendicitis like symptoms, one should seek for corresponding hyperalgesic zones in other regions of the abdomen. The diagnosis of pseudoappendicitis or psychogenic appendicitis is considerably facilitated by the finding of numerous hyperalgesic areas in the skin. I would also like to call attention to a method, which has rendered me good services in the differentiation of a mere hyperalgesia of the skin from a simultaneously occurring deep seated tenderness—that is, the treatment of the hyperesthetic zones for several days with Bier suction cups. I have found that if the sensitive area is made hyperemic twice daily for three to four days for periods of half an hour each, the hyperalgesia of the skin disappears, whereas the deeply located tenderness remains. With this simple procedure I have been able to eliminate a large number of cases of pseudoappendicitis; on the other hand, after the elimination of the cutaneous pains one can readily tell whether an inflammatory process is going on in the depths of the appendix region or not.

According to my experiences, a circumscribed point of tenderness in the vicinity of the attachment of the appendix is of special significance in cases of socalled appendicular colic. I believe that I can safely say that this form of colic occurs more frequently than is generally believed, but that in spite of its peculiar course it is seldom recognized. I can therefore briefly discuss the disease picture of appendicular colics, to which Talamon was the first to draw attention. It is characterized by suddenly appearing, severe attacks of pain, attacking the entire abdomen diffusely, which disappear after a few hours, but leave after their cessation a distinct subjective (which is the most important) and also an objective tenderness in the vicinity of the appendix, which remains for several days and then recedes. Similar attacks, with exactly the same palpatory findings, may recur in the course of weeks or months. I know, of course, that stones in the ureter and the kidney may produce the same or a similar symptomatic picture under certain circumstances, and I also admit that acute or recurring diseases of the adnexæ may produce a similar disease picture in females. But, by exclusion of the same, it is my firm belief, it is justifiable to establish the diagnosis of appendicular colics and to draw therefrom the necessary conclusions.

Accordingly, if we are to expect anything from the application of a point of tenderness and are to draw any conclusions from it, a number of important prerequisites must be seriously considered. The omission of the same is probably the reason why, as I believe, these points of tenderness have been so notoriously disregarded in recent times by the majority of surgeons. The first prerequisite is that the point of tenderness should be found constantly in the same spot; the second is that it should not be a skin or muscle pain, and the third is that, with the exception of this point of tenderness, no other possible tenderness should be demonstrable in that region. The moment that the tenderness is not strictly confined to the region of the appendix, but extends to parts of the colon or cecum, it naturally loses all value and every diagnostic significance. Naturally, under these conditions the appendix may also be involved in addition to the cecum, but we can then give no diagnostic opinion regarding it, at least on the basis of the palpation.

Another question is, whether the absence of a point of tenderness at or near the attachment of the appendix excludes the existence of a chronic appendicitis. The answer is no. I have already shown above, that in appendicular colics the tenderness is closely associated with the attacks, again to disappear after

a few days, and the same statement applies to the slight, periodically recurring attacks of pain in the appendix. In the painless stage and in the presence of absolute painlessness of the appendix, we can express an opinion, as to whether it is diseased or not, only with extreme caution.

I must emphatically contradict the statement found in the literature and based upon the examinations of young students by Keith and Treves, that a tenderness over McBurney's point or similar points are demonstrable in the vast majority of healthy persons. This can be admitted only, as I certainly have been able to observe not rarely, when the appendix region is brusquely manipulated with the hands. A carefully practised palpation of the cecum or its surroundings is entirely painless, as I most certainly assert in healthy individuals.

Summarizing, I would say regarding the diagnostic significance of the points of tenderness, that they have no decisive value, but that together with the entire symptomatic picture, namely with a constantly persistent location in a closely circumscribed area and with the elimination of merely cutaneous tenderness, they probably indicate a diseased condition of the appendix. Although the absence of a point of tenderness does not exclude a chronic inflammation of the appendix, it, nevertheless, alone does not allow any opinion in the positive or negative sense.

I can be brief regarding the second diagnostic method—the palpation of the appendix. Even though such an experienced palpator as Th. Hausmann says that the appendix can be palpated at the most in fifteen per cent. of the cases, and this only under certain definite conditions, and if one considers also that not every palpable appendix is always chronically inflamed, it is easy to see the slight significance of palpation of the appendix. According to my personal experience the palpation of the appendix is a purely accidental finding and we cannot speak of its diagnostic value in a general sense.

Slight rises of temperature may also have a certain significance in diagnosis, and this in two directions. There may either be transient rises of temperature in acute exacerbations of chronic inflammatory conditions, or there may be persistent slight rises of temperature. Attention has been called both by myself and others to the disparity between the axillary and rectal temperatures. The above mentioned rapidly passing rises of temperature are the most valuable. Unfortunately it is only rarely that we are in a position to determine it with certainty and to evaluate it accordingly. With persistent rises of temperature we must, as I agree with W. Neumann and Schnitzler, be very reserved in our decision, as there may also be other causes of fever, such as latent tuberculosis not only of the lungs, but also of other organs, genital affections, insidiously coursing processes in the kidneys, the biliary passages, and other conditions. We are still left considerably in the dark and remain so, regarding various other causes of slight rises of temperature, as I have been able to convince myself through years of experience.

Röntgenographic demonstration of the appendix, which has been undertaken by many authors in recent years, especially in regard to the lesser or greater capacity of the appendix to empty itself of the contrast medium, plays an important part in diagnostic evaluation. As a matter of fact we initiate with it for the first time the conception of a truly functional method. It takes its origin in a direct proof of motility in a röntgenological manner, which has also proved itself extraordinarily valuable in the diagnosis of gastrointestinal diseases. The questions that arise in this respect are of various sorts: 1. How often does the appendix fill itself under normal conditions and how often in pathologically changed appendices? 2. How long does the appendix remain filled in pathological, in contrast to normal, conditions? 3. How does the normal and the diseased appendix behave, not only toward firm, but also toward fluid contrast media? As far as I know, this question has not yet been investigated, but it appears to me that we ought to be able to gain information in this manner regarding the extent of some stenoses and obliterations.

Recently a number of interesting preliminary articles by Almens, Rappaport, L. Kuttner, and Czepa have become available for the functional test of the appendix. The observations of Kuttner in conjunction with Arth. Fränkel, that in disease of the appendix residua of the contrast medium are encountered after several days, even though the colon has been entirely freed of the contrast medium with a purgative, appear to me to be of considerable diagnostic significance. With this method Kuttner, for example, was able to make the correct diagnosis of chronic appendicitis in many cases, in which there had been a suspicion of gastric or duodenal ulcer and, accordingly, to have these patients successfully operated upon.

In my private clinic I have myself frequently used the method of Kuttner and Arth. Fränkel. The number of examinations, however, is not yet large enough to allow me to make a report. Nevertheless I believe that the functional test of the motility of the appendix is valuable in the diagnosis of chronic appendicitis, which may well surpass all the others in significance on further confirmation.

In addition to the symptoms mentioned, there is still another group, which I will mention only briefly, because they appear to me to be extremely uncertain, for example, distention of the rectum with air proposed by Dreyer, the air cushion symptom emphasized by Klemm, the Rovsing sign of counter pain, muscle tension, and others. The reference to the diagnostic significance of the rectal examination is also frequently found in the literature. Just as highly as I value it in acute appendicitis, just so insignificant has it been, according to my experiences, in chronic appendicitis.

Owing to lack of space I can only touch upon the differential diagnosis of chronic appendicitis only in a few words. Fundamentally, one or more differential diagnostic considerations are associated with every diagnosis of chronic appendicitis. The important ones are almost always the typhlitis or colitis, ureteral or renal calculi, and the genital apparatus in females. In colonic spasm and other neurasthenic symptoms, the possibility of a psychogenic involvement of the appendix must be taken into account. In addition, even though much rarer, atypical forms of cholelithiasis and, as mentioned, the parapyloric ulcer may come up for consideration. And so there will also be other cases of appendicitis, which, in the

sense of Ewald, are and, unfortunately, will also remain latent.

Essentially it will be a matter of thinking of all the various possibilities and, accordingly, of utilizing all the necessary clinical methods of examination, the details of which I naturally cannot discuss. I wish only to call attention to the fact, there being no reference to it in the literature, that latent or slightly developed inguinal hernias may simulate the picture of chronic appendicitis. I know of a large number of cases, which had passed through many hands unsuccessfully, and in which I have permanently relieved these forms of pseudoappendicitis of their symptoms, simply by a truss.

Finally, the question must also be answered, whether in the present state of our knowledge we are able to recognize other diseases of the appendix and its surroundings, such as the rare carcinoma, tuberculosis, actinomycosis, invagination, diverticulum of the appendix, and others, and to differentiate these from chronic appendicitis. I must say no. All of these conditions can be determined only by biopsy or necropsy. According to our present diagnostic aids we can do no more than make a diagnosis of chronic appendicitis.

I now turn to the therapy of chronic appendicitis and I will first raise the question: Is there an effective internal treatment of the same? In so far as the processes of the appendix associated with true, organic changes are concerned, this question—about this there is no doubt among men of experience—must be answered in the negative. One may indeed bring the symptoms of the chronic inflammation temporarily into a state of latency by means of extensive rest cures, cataplasms, hyperemia treatment, by a rational diet and regulation of the intestinal activity, but we cannot speak of a really permanent cure in the true sense of the word. Occasionally spontaneous cures may possibly occur in the very slight initial forms of appendicitis, the socalled irritations of the appendix, or in appendicular colic, and these may be favored by the measures mentioned above. Permanent cures may also be achieved in pseudoappendicitis and in the psychogenic forms of appendicitis, partly by mere suggestive treatment and partly by instrumental or pharmacological psychotherapy. On the whole, however, we can hardly speak of permanent cures in the true chronic inflammatory conditions.

What attitude should the internist take toward the surgical treatment of chronic appendicitis? We cannot dismiss this question with the very popular and easy statement of the individual point of view. We must at least attempt to establish certain rules.

The difficulties lie mainly in the absence of definite diagnostic evidence, which I have already sufficiently illustrated heretofore. Critically speaking, the surgical intervention is an exploratory laparotomy in the majority of cases. But even more than that, many surgical interventions are nothing more than an exploratory therapy. Finally, the therapy is not convincing under all circumstances. Several years ago Krecke of Munich reported upon twenty cases with appendix symptoms, in which the appendix was extirpated. The most careful search in these cases showed neither macroscopic nor microscopic evidence of an inflammatory process. Nevertheless, a subsequent questioning of seventeen of the patients operated upon (eighty-five per cent.) revealed some enthusiastic reports upon the excellent curative results. These were undoubtedly appendicitis cures produced psychogenically.

All of these circumstances make it difficult for the physician with a sense of responsibility to draw any conclusions. After all the diagnostic aids and the differential diagnosis are exhausted, he must truthfully admit to the patient that according to the present state of our knowledge more than a probable diagnosis cannot be made, and that a definite promise of a cure cannot be given, but on the other hand, that the prognosis for a cure is certainly favorable with a relatively harmless intervention. On the other hand, appendectomies must be distinctly warned against in psychogenic appendicitis. The fact that in recent years attention has been called emphatically by recognized surgeons, by Küttner and his pupils Melchior and Löser, by Liek, Schnitzler, and others, to the serious sequelæ that are associated with appendectomies in cases of pseudoappendicitis, is greeted with great joy.

That much for the general indications. In special conditions I am in favor of operative intervention in the following conditions: In the first place, in children, in whom continued rest cures and protective measures constitute an extremely difficult factor in physical and mental development. In the second place, in adults in whom the differential diagnosis between appendicotyphlitis, or appendicocolitis and appendicitis is impossible. This diagnostic uncertainty also has its effect upon the therapeutic uncertainty. Typhlitis with its various modifications demands entirely different therapeutic measures than chronic appendicitis, and often just the opposite. In one word, we are not masters of the situation. Only after the appendix is removed, do we again stand on firm soil therapeutically. Undoubtedly, with this attitude, we will now and then be compelled to unnecessarily remove an appendix. In this dilemma, from which we as physicians cannot escape, and which affects the nervous system of the patient at least unpleasantly, it appears to me to be better to sacrifice a normal appendix, than to be constantly shifting about diagnostically and therapeutically. The end will be appendectomy whether we wish it or not.

I also consider appendectomy as indicated in the constantly recurring appendicular colics, provided they can be assumed to be probable or certain on the basis of the points mentioned heretofore.

Finally, in agreement with Schnitzler, I am in favor of appendectomy in cases where severe acute cases of appendicitis have occurred frequently in families and a member of such a family is suffering at the time from recurrent painful conditions in the cecum or in the appendix. Even if the diagnosis may be doubtful—of course, not in typhlophobia—I am in favor of operation, particularly in children and in young adults.

There are undoubtedly other indications for the removal of the appendix, but those mentioned will be encountered most often.

As you may see from my conclusions, chronic appendicitis is a pleasant disease for neither the surgeon nor for the internist, because we can master it neither diagnostically nor therapeutically. But just as in

other specialties, I hope that in this also an intelligent cooperation of surgery and internal medicine will endeavor to straighten out differences and to clarify confusion.

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Chronic Appendicitis from the Surgeon's Viewpoint

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It is a difficult and thankless undertaking to speak of a disease picture from the viewpoint of any clinical branch of knowledge when the right of its existence is questioned by the pathologist. A number of clinicians, among whom Sprengel is the foremost, endeavor to adduce evidence that there is a form of appendicitis which runs a chronic course from the beginning. In the field of internal medicine, it was predominantly Ewald, who under the terms of appendicitis larvata reported upon a disease picture, which, aside from the typical cases of appendicitis, gives rise to more general abdominal symptoms, so that these cases can be correctly recognized as appendicitis by the physician often only by the the process of exclusion and by the positive symptom of tenderness at the typical site. This form of appendicitis with a purely chronic course is now generally looked upon by the pathologist skeptically, and Aschoff, as a result of his findings, maintains that there is no such a condition as a primary chronic inflammation of the appendix, but that everything that suggests chronic inflammatory changes in this organ is nothing else than the residuum of a past acute inflammation. With this negation of the pathological anatomy the clinical aspect of chronic appendicitis as a disease sui generis falls away, if we wish to cling to a strictly scientific basis. Nevertheless, chronic appendicitis as a primary disease of the appendix is still defended today by clinicians of great experience, among which I will mention two names—Kümmell, who has always defended it in his speeches and writings, and Lanz, who even looks upon an acute attack of appendicitis as the flaring up of an old preexisting chronic appendicitis. I myself must admit the guilt of having reported cases in 1907 under the terms chronic adhesive appendicitis, which might even give the impression of malignant tumors. As a matter of fact there is in these cases a basic appendicitis, which runs its course without attacks, but which often produces severe symptoms as a result of chronic inflammatory changes in the ileocecal region. I will return to a consideration of these cases shortly. First of all, however, attention must be called to the fact that a surgeon like Schnitzler, who has had special experience in this very question, takes a more than skeptical stand against the justification for the existence of a purely chronic appendicitis.

If we adhere strictly to the pathologicoanatomical viewpoint, and we cannot swerve from this clinical manner of thought which has become a law, then we must support the view of such an experienced pathologist as Aschoff, namely, that every chronic appendicitis is the natural result of an acute inflammation, a course which we are very frequently accustomed to see in what we call inflammation. We must certainly admit that it is much more like the nature of the pathologicoanatomical processes that we know, when we see a chronic inflammation gradually follow an acute inflammation, than the reverse, when an inflammation running a purely chronic course from the beginning shows a flareup in the form of an extremely acute inflammatory process. At any rate, as I have already mentioned, the latter possibility is nevertheless assumed to exist by some clinicians and an attempt is made to support it by such observations.

In regard to the practical medical working out of this originally pathologicoanatomical question, it must be conceded that it would be of subordinate significance for the medical diagnosis of the individual case if it were possible to diagnose a chronic appendicitis with certainty from its symptoms. It is just this difficulty in making a diagnosis that has frequently given rise to mistakes, which, because they were unrecognized again gave rise in part to an indiscriminate symptomatology of chronic appendicitis, which has flourished to such an extent that the statement may be made unhesitatingly that there are some physicians who, when they cannot find any anatomical tangible data, with even the most vague abdominal symptoms, seek the cause of the symptoms in a chronically inflamed appendix. That harm can be done in this way and has even been perpetrated is shown by those cases, which are not improved by an appendectomy based on such a poor diagnosis, or which are further complicated by additional symptoms attributable to new and resulting adhesions.

The patients whom we see with numerous laparotomy scars and persistent symptoms and make the statement that the first operation improved their condition with the removal of the appendix, frequently also lend support to the claims for an appendectomy that offers little hope of success.

Even if, as is selfunderstood, we have no right to criticize the method of treatment of a colleague without definitely knowing why he resorted to a certain procedure and what he found, it cannot, nevertheless, be denied that every experienced surgeon not very infrequently also sees another category of cases following appendectomy which are rather afflicted with an undoubtedly organic disease in the abdomen (according to my personal experience usually diseases of the gallbladder, duodenal or gastric ulcers, and diseases of the female genital organs) the carefully taken histories of which make it appear very likely that the condition had existed at the time of the appendectomy. How often these very patients claim that really nothing or only a very slight affection of the appendix was found!

Again, other patients do not go to the surgeon after the removal of a socalled chronically inflamed appendix but to the internist, and then soon augment the population of the sanatoria for tuberculosis.

All of these groups that are justly disappointed with the appendectomy show evidence that chronic appendicitis is diagnosed too often, and this is at least partly due to the difficulty of the diagnosis. I cannot agree with those colleagues who find even the diagnosis of acute appendicitis not easy and who base their belief essentially on the unreliability and inapplicability of the points of tenderness mentioned therein, but I do subscribe to the enormous difficulty which might arise when we must diagnose a chronic appendicitis without the finding of previous acute attacks in the history.

With these remarks I return to the evidence collected by Aschoff. Even though the pathologist can show us the residua of a past acute process in the chronically inflamed appendix, it does not prove that these acute inflammatory processes have produced any clinical symptoms, and still less that they were observed by the physician and properly interpreted. We know from hundreds of experiences that patients come into dispensaries with very severe empyemas of the appendix and even occasionally with already existing perforation, and there patiently wait, because they have no or almost no symptoms. How often does an acute attack of appendicitis run such a rapid course that the physician is called too late and a diagnosis is rarely possible!

I shall never forget two such cases because two persons very dear to me were affected:

The first case was that of a very dear friend and colleague, with whom I was in almost daily contact during my Innsbruck activities, and who never had had even the slightest abdominal symptoms. During the best of health he watched me during an operation and then broke down about ten minutes later with the symptoms of an acute perforation. An immediate operation confirmed the diagnosis of an appendiceal perforation with an empyema of the appendix, which the colleague naturally, as he assures me even today, carried about absolutely without symptoms. This is a classical example of the cases familiar to us all of the existence of severe inflammatory changes in the appendix, which produce no symptoms so long as the peritoneum is not involved as well.

The second case was that of my own daughter, who suffered with very severe colics of extremely short duration from her second to her thirteenth year of life, which according to the description could hardly be of other than appendicular origin, but which I could only judge from hearsay, as I invariably had occasion to examine her only after such an attack, when there were absolutely no symptoms. I, myself, witnessed such an attack only in her thirteenth year of life, and this left no doubt as to the diagnosis and the immediately executed operation revealed, in addition to a fresh empyema of the appendix with fibrinous deposits upon the serosa of the same, a series of scars in the organ itself, so that it was plainly evident that the former attacks were actually referable to the appendix. This case is the best illustration of the occasional flightiness of slight attacks of appendicitis, when they can elude a father who is a surgeon, so that for eleven years he is not in a position actually to observe one of these attacks, and therefore could not make a diagnosis during all that time.

That many such and similar cases as the latter run their course under the conception of a socalled latent or chronic appendicitis, and others under the term of chronic adhesive appendicitis without attacks, is highly probable, and the attending physician in such cases must not be accused of illogical thinking, if there is an indefinite history, when he can gain the impression of a purely chronic course of appendicitis. In such a case it is the same as in many other fields of human pathology, that it is easier for the pathologist, who can examine the diseased organ under the microscope most minutely, than the physician, who must picture to himself the nature of the organic disease by an indirect examination and is also frequently dependent upon the statements of the patient, which are not so rarely unreliable, both as regards their sensation during the examination and their past history. It can thus happen that a laparotomy can even be done under a false diagnosis, when rather accidentally severe chronic changes may be found in the appendix with adhesions, as a result of which, for example, I at one time was inclined to include certain cases under the collective term of adhesive appendicitis without acute attacks. These very findings, however, as I was able to show at that time and since then have repeatedly observed, show that several inflammations had attacked the appendix, and that the term "without acute attacks" can therefore be justified only in a clinical sense, that is, saying nothing else than that the previous acute inflammatory symptoms were not sufficiently appreciable by either the patient or his attending physician. But no one, not even the greatest skeptic, will deny that such cases as I have just mentioned can be considered as chronic appendicitis in the stage in which they were operated upon.

If one takes into consideration also the relative frequency of appendicitis in childhood, with its frequently exceedingly great difficulty of interpreting the symptoms, in which every successfully overcome attack may leave behind residua in the appendix, and in which finally many years may pass but less severe symptoms eventually lead to an appendectomy, then one can easily understand why a belief in a primary chronic appendicitis has persisted so long in the mind of physicians. Moreover, those cases of chronic appendicitis, which are recognized as indurative appendicitis, and which, for example, may result from the destroyed appendix previously becoming agglutinated to its surroundings through a destructive inflammation and perforating through the peritoneum which lies over it as a protective covering, even though this is rarely the case, may run their course without symptoms up to the appearance of a hard tumor.

This also explains why these very patients occasionally are operated upon under a false diagnosis of tuberculosis or even of carcinoma. I certainly know of a number of such cases that were explained only by the findings at the laparotomy. Finally, we must also briefly discuss those cases, in which the chronic inflammation of the appendix is nothing else than the involvement of this organ in a chronic inflammation of the entire colon or selected portions of the same. In regard to these very cases the question has been raised whether a colitis is followed by an appendicitis,

or vice versa. I believe that this question has no basic justification. This question has been discussed illogically according to the law of *post hoc, ergo propter hoc.* It would be just as difficult to understand why the appendix should not be involved in disease of the entire colon, nor can it be understood *a priori* why disease of the small appendix should lead to severe changes of the mucous membrane of the colon, which under all circumstances is favored by more suitable physiological conditions. Even though cases in which the colitis was recovered from after the appendectomy are repeatedly reported, nevertheless these cases should be judged with the greatest skepticism, and may frequently be explained in this way, that the appendectomy first gave rise to a truly effective treatment of the colitis, or that the rest and diet necessarily associated with the operation improved or made the symptoms of the colitis disappear.

The variability of the anatomical findings in the appendix observed in chronic appendicitis (naturally only those cases are included in which the appendix shows any findings at all that might justify the diagnosis of inflammatory processes) makes it clear that the symptomatology of chronic appendicitis may also be extremely variable. All that has been written about the symptoms for which a chronic inflammation of the appendix has been made responsible cannot stand severe criticism, and also is undoubtedly responsible, as I have said before, for the fact that chronic appendicitis is diagnosed much too often. Generally speaking, there is hardly a single symptom that points to disturbances of the abdomen that is not also supposed to have been observed in chronic appendicitis. If one compares the slight symptoms with these frequently quite severe symptoms, and also the occasionally even absent anatomical changes in the appendix, the unreliability of this sort of a diagnosis is selfevident. I only mention that every sort of painful sensation in the abdomen, up to severe colics, digestive disturbances of all sorts, nausea and vomiting for which no tangible cause can be found, obstipation, on the one hand, and diarrheas on the other, and many others, have been mentioned as a part of the disease picture of chronic appendicitis. It is just these most contradictory symptoms, such as obstipation and diarrhea, hyperchlorhydria and hypoacidity that are included in the symptomatology of chronic appendicitis, to the diagnosis of which in general tenderness in the region of the appendix and slight, usually evening rises of temperature, are necessary.

Like König, I would like to make a few remarks on the most valuable symptom—the tenderness in the ileocecal region—when this is found repeatedly during various examinations, and I am not such a profound skeptic as Schnitzler in the evaluation of the points of tenderness. Even though we must agree with Schnitzler, that the large number of points of tenderness generally mentioned as valuable in appendicitis shows that the reliability of any one of them must be considered as problematical, in my opinion it may be said in reply, that, as a matter of fact, all these points of tenderness are not and cannot be points that correspond to the position of the appendix, which is a variable one, but of tenderness in the immediate vicinity of the diseased part of the abdominal cavity, which is usually associated with marked muscular spasm, and which I have for a long time designated as tenderness in the ileocecal region. It must certainly be admitted that this tenderness usually is a good guide in the diagnosis and cannot be set aside as too trivial, because it, at least in my experience, does not leave us in the lurch in the frequently not very easy differential diagnosis between acute appendicitis and a beginning central pneumonia, which, as is well known, might lead to subjective pains in the ileocecal region. I believe, even though I myself have had no extensive experience with this method, that one ought also to give consideration to hyperesthesia of the skin in the sense of Mackenzie and, at any rate, not to neglect this very simple diagnostic method. On the other hand, I fully agree with Schnitzler when he is opposed to the value of rises in temperature in the diagnosis of a chronic appendicitis, and I share his conviction that rises of temperature should be evaluated rather against than in favor of a chronic appendicitis.

Ever since I have been a clinical teacher I lay the greatest emphasis in my teaching upon showing the students the slight value of the behavior of the temperature in the diagnosis of acute appendicitis, because, according to my experience, the greatest number of unfortunate cases (in the sense that cases of severe acute appendicitis are referred for operation too late) are due to the fact that the attending physician does not make the diagnosis even though it is evident, because there is no, or in his opinion not a sufficient rise of temperature. I always emphasize the fact that a severe empyema of the appendix and even a perforation may occur without fever, whereas, for example, an oxyuris appendicitis in a child occasionally gives a temperature up to 40° C., although hardly any noteworthy changes in such an appendix are demonstrable externally.

And what applies to acute inflammation with all its pathological products, should this not also apply to the exquisitely chronic inflammation? It is just the cases with rises of temperature, which must give us the opportunity of avoiding a diagnosis of chronic appendicitis before any organic disease, especially one of the lungs, is excluded by every possible means.

As in every other condition, röntgenography has in recent times also been given much attention in chronic appendicitis. Even during the latter years of my activity at Innsbruck, the director of the Central Röntgenologic Institute there, Staunig, made some successful endeavors in the röntgenologic demonstration of the appendix, and in a similar way it was possible for Loeb, the director of the Central Röntgenologic Institute in Graz, to demonstrate the appendix with the fluoroscope. Certain changes in the position and form of the appendix, provided tenderness is demonstrable simultaneously by fluoroscopy, delayed expulsion of the contrast medium and residual spots, are significant in the frequently very difficult diagnosis of a chronic appendicitis. I must particularly agree with Kuttner, that the finding of residual filling in the appendix at a time when the rest of the colon has already completely expelled the contract medium, should be considered as a pathological röntgenological finding. The very aid that röntgenography has given heretofore in this respect prompts me in a few words to call attention to the significance of the position of the appendix and the nature of its

insertion into the cecum for the possible origin of a chronic appendicitis.

It was principally Hochenegg who called attention to these matters, which, naturally, were also subjected to criticism. In contrast to others, I maintain that abnormal positions of the appendix and, especially, the abnormal insertion of the cecum may very well give rise to abnormal filling conditions of the appendix and consequently also to abnormal conditions of irritation, as a result of which a chronic inflammation may develop in the course of time. But, naturally, a prerequisite is that chronic inflammatory changes be actually demonstrable in the appendix in each individual case. We must not, under any circumstances naturally, go so far as to defend obstinately the diagnosis of a chronic appendicitis, when this organ shows no changes worthy of mention. And this occurs, unfortunately, often, and, as a result, the existing confusion is made still worse.

At any rate, this question was brought up especially by the fact that all of the processes that develop in the ileocecal region that are associated with tenderness in this region, whether it occurs spontaneously or only during a physical examination, are identified occasionally with chronic appendicitis. In this respect we can refer to the classical description of de Quervain in the latest edition of his well known *Diagnosis*. Both the membranous enteritis, which remains confined to the cecal portion of the colon and the stercoral and ulcerative typhlitis of this portion of the gut are frequently and without thinking identified with chronic appendicitis as is cecum mobile, typhlectasia and typhlatony. We encounter here the same condition, as I have indicated heretofore, namely, that disease pictures with the very opposite result are identified with chronic appendicitis, and that such a procedure can and must have serious results upon the therapy hardly needs any further discussion.

It is a very well known fact, unfortunately, that in these proverbial cases, in which an appendectomy with cecopex had been done, it was followed by cecolysis, naturally done by another surgeon. Equally well done are the cases described previously, in which an unnecessary appendectomy is followed later by a laparotomy for an actual organic disease, which had already existed at the time of the appendectomy, but was not recognized. Finally, there also belong to this group the cases already briefly described, in which the appendectomy is the first step to multiple laparotomies, of which every one, especially the first, had better been omitted. Generally, these most unfortunate victims of this abdominal polypragmasia are recruited mostly from that group of individuals who, at any time and for various reasons, imagine themselves to be suffering from an appendicitis. Unfortunately, after a more or less diligent search, they eventually find a willing surgeon who removes the appendix. Other surgeons, just like myself, no doubt also find cases, in which, according to the dictates of conscience, an operation is advised against, but which do not rest until the operation is performed by some one and then ruefully return to the surgeon who refused to do the operation because of their usually more severe pains.

If one sifts out this artificially produced chaos, which is presented to you in bold outlines, little is left of what we may with a clear conscience call chronic appendicitis:

1. The cases, which it would not really be necessary to mention, in which following one or several acute attacks of appendicitis there develops a chronic change in the appendix, which continually produces symptoms. If acute attacks are observed by the physician, the diagnosis of secondary chronic appendicitis is naturally much easier and can be made with greater certainty even in the presence of less pronounced symptoms than when there is only the mention of acute attacks in the past history.

2. The cases, in which a chronic appendicitis actually exists without any demonstrable acute attacks having preceded it. This group includes, among others, the cases designated by Ewald as appendicitis larvata, the cases of chronic adhesive appendicitis, and some rare cases of socalled indurative appendicitis. The pathologicoanatomical findings in chronic appendicitis may be of various types.

The diagnosis of these cases included under group 2 may, under certain conditions, be exceedingly difficult; it will often be no more than a probable diagnosis and it will also include cases in which the diagnosis is impossible. The reason for this is, on the one hand, the exceedingly variable symptoms of which the patients complain, and the slight objective positive clues that are available to the physician, on the other hand. At this opportunity, I would again like to say that I, in contrast to the opinion of others, attach the greatest importance to the exclusive tenderness in this region, and also to the röntgenologic findings in the hands of an expert röntgenologist. This röntgenographic examination is to include the thoracic organs, and I would like to say that the diagnosis of chronic appendicitis in this group of cases is to be made only when the involvement of other organs or symptoms can be excluded with the same certainty as with which we can exclude such diseases. The fact that these are cases that run an exquisitely chronic course justifies a careful and a systematic röntgenographic examination.

3. Some cases of typhlitis cannot be differentiated from chronic appendicitis with the aid of the existing diagnostic means, this being especially so in this condition, as the appendix may also be actually affected. The disease pictures designated under the names of cecum mobile, typhlectasia, and typhlatony, in themselves, have no connection with chronic appendicitis, and, if we can at all speak of diseases, we must speak of them separately in order to avoid confusion. Whether surgical treatment is indicated in this condition, is a separate question, which in this connection, I would like to say, I am glad not to be compelled to discuss.

In regard to treatment, appendectomy is naturally indicated in the cases of group 1. Of the cases included under group 2, the indurative appendices occasionally require a special procedure in the sense that a partial intestinal exclusion through a lateral ileocolostomy should be added to the appendectomy, if the indurative adhesions, as is not too rarely the case, have drawn into themselves also portions of the lower ileum or quite large portions of the cecal wall. Otherwise, appendectomy alone is indicated in the cases cited under group 2. Whether this offers any hope of success in those cases of group 3, in which the

chronic appendicitis is only a partial phenomenon of a typhlitis, cannot be said in advance in the individual case.

If in cases, in which the diagnosis cannot be made with certainty, an appendix is removed—the slight changes of which cannot explain the abdominal symptoms of the patient—then this appendectomy, provided that any other organic disease was excluded with the greatest carefulness, can do no harm to the patient.

Appendicitis in the Hernial Sac

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Appendical hernia is not common, being about as frequent as bladder hernia. Both of these varieties are most often found in subjects past middle life, and the appendix is usually accompanied by the cecum, omentum, or small intestine. On the other hand, isolated hernia of the appendix is found most frequently in infants under two years of age.

The appendix was first distinguished by Berengerius Carpus in 1524, described by Vesalius in 1543, and by Fallopius in 1560. In 1561 Vidus Vidius gave it the name of appendix vermiformis.

De Garengeot, in 1731, was the first to describe the appendix as a content of a hernial sac. The next case was reported by Amyand in 1736, and another by Morgagni in 1761; and in 1785 Hévin described in detail an operation for purulent appendicitis in the sac of a femoral hernia. Other cases were reported by Tritschler, in 1806, Hesselbach, in 1814, Taramelli, in 1835, Javanelli, in 1836, and a number of other early writers.

Merling in 1836, described a strangulated appendical hernia that was successfuly operated on by Tiedmann. Charyau, in 1837, and Cabaret, in 1842, also reported instances in which they had operated for hernia of the appendix. During this early period operation was undertaken only when an abscess had formed, and then the procedure consisted of simple incision and drainage.

From the middle of the nineteenth century, the operation was resorted to with increasing frequency, and with the advent of antisepsis it was undertaken earlier, but unless the appendix was gangrenous, it was reduced into the abdominal cavity. It was not until near the close of the last century that the removal of the appendix became a routine procedure.

VARIETIES

Inguinal hernia of the appendix is the most common form, constituting about fifty-five per cent. of all cases; forty per cent. are femoral; four per cent. umbilical; the remaining one per cent. being ventral, diaphragmatic and obturator.

The noninflamed appendix in a hernial sac is seldom diagnosed before operation. When the appendix is accompanied by the cecum or other viscera, it is usually healthy or only slightly diseased, because the hernial rings are necessarily large and the presence of the other viscera protect the appendix from pressure from the hernial ring, and adhesions to the sac wall do not form as often or as early as in isolated appendical hernia.

When the appendix is alone in the sac, the hernial ring is small and constriction sometimes occurs. In ninety-five per cent. of the cases of hernia of the isolated appendix, the appendix is adherent to the sac wall. Adhesions are more constant in this variety of hernia than in any other. The presence of adhesion and a narrow ring favor the early development of inflammation and infection. These complications are more frequent in femoral hernia, on account of the small femoral ring and the pressure and trauma produced by the movement of the thigh, than in inguinal hernia. Appendices in hernial sacs may be of normal length, four to five inches, but more often they are thickened and elongated, sometimes attaining a length of eight to twelve inches.

When hernia of the isolated appendix occurs in subjects with enlarged hernial rings and relaxed abdominal walls, it usually drags the cecum into the sac in a short time. When the appendix is in the hernial sac, it is more commonly subject to acute and chronic inflammation than when it remains in the abdomen.

Strangulated appendical hernia is rare. The term is often incorrectly applied to ordinary hernial appendicitis and this has led to much confusion. Appendicitis in the hernial sac has often been diagnosed as strangulated hernia, simply because the mass was irreducible and gangrenous, while in reality the same changes in an intraabdominal appendix would have been ascribed to inflammation and infection. I believe that most of the reported cases of socalled strangulation of the appendix are in reality hernial appendicitis.

Partial strangulation, which is very frequently the first stage of hernial appendicitis, is favored by the following factors: The dependent position of the appendix; the obstruction to the blood supply of the appendix, due to the weight of the cecum or other overlying viscera; the occasional pressure exerted by the edge of the hernial ring; and rarely, the presence of a fecal concretion or foreign body in the lumen of the appendix. The swelling, edema and congestion of the first stage, together with the increasing circulatory obstruction, lower the resistance of the appendix and provide the setting for the second stage, which consists of infection, followed by inflammation that terminates, as a rule in gangrene and perforation.

When the cecum or other viscera are strangluated with the appendix, the changes in the appendix seldom proceed beyond the first stage of edema and congestion. Complete strangulation of the appendix is rare, and almost always occurs when the appendix is the sole content of the sac. Nearly all of the recorded

cases have been in femoral hernias. In strangulated appendical hernia the sac usually contains fluid, which is clear, turbid or blood tinged. The appendix is dark in color, sometimes dusky or purple, and if gangrenous it may have a dead leaf hue, the same as strangulated intestine. The thick lymph associated with inflammation is absent and adhesions are not extensive. The point of constriction can usually be seen at the base of the appendix, or on the lower part of the cecum just beyond the cecoappendical junction. After the constriction is divided, a groove or furrow can often be seen at the point of strangulation and the appendix quickly assumes its normal color, just as other strangulated intestine does, providing gangrene has not set in.

The usual point of constriction is the rigid boundary of the hernial ring, especially the sharp edge of Gimbernat's ligament in femoral hernia. Sometimes the constriction is due to an omental band which is adherent to the sac wall; or to the neck of the sac being very narrow; or to a constriction in the sac itself.

When the mesoappendix accompanies the appendix into the hernial sac it soon becomes adherent to the sac wall or to the other contents. It is usually thickened, elongated and contains an excessive amount of fat, which increases the danger of strangulation by pressure on the appendix. When the mesoappendix is strangulated it has the appearance of intense venous congestion, resembling strangulated omental hernia.

RETROGRADE STRANGULATION

Retrograde strangulation sometimes occurs, usually when the appendix is abnormally long. The central portion of the appendix is caught in the hernial ring, while the tip and the base remain in the abdomen. The pressure at two points obstructs the blood supply and gangrene and perforation of the proximal end may develop rapidly.

AMOUNT OF APPENDIX IN HERNIAL SAC

The entire appendix is usually found in the sac of cecal hernias. Factors that favor the complete descent of the appendix are: An abnormally mobile cecum; a long mesoappendix; the absence of adhesions in the neck of the sac; and adhesion of the tip of the appendix to the testis, or to the fundus of the sac in complete hernia.

In a majority of the cases of hernia of the isolated appendix only one half to two thirds of the appendix lies in the sac. Incomplete hernias are usually caused by adhesions of the appendix to the neck of the sac, a short mesoappendix, an immobile cecum, and traction exerted on the appendix by the cecum. When the mobility of the cecum permits it to travel to the left side to a point opposite the left internal inguinal or femoral rings, it is an easy matter for the appendix to descend into a preformed sac. In left sided appendical hernias, the appendix is nearly always abnormally long, while in rightsided ones it is usually normal in length.

ETIOLOGY

Isolated inguinal hernia of the appendix is found most frequently in subjects under ten years of age. Hernia of the appendix and cecum is found most often in the middle aged or elderly, increasing in frequency as age advances. Femoral hernia of the appendix is most frequent between the fortieth and seventieth years. Inguinal hernia of the appendix nearly always occurs in males, and femoral appendical hernia in females.

The exciting causes of appendical hernia are the same as those that apply to other intestinal hernias, such as trauma, strain, lifting, coughing, whooping cough, and anything that increases intraabdominal tension. When the cecum enters the sac first, the hernia of the appendix is usually due to a long continued intraabdominal tension associated with a slipping of the parietal peritoneum, such as occurs in sliding hernia.

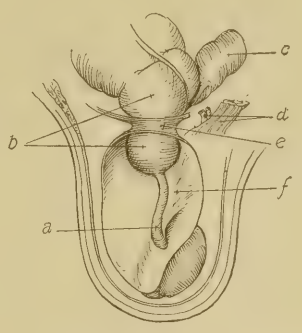

FIG. 1.—Appendicitis in the hernial sac: a, appendix; b, cecum; c, ileum; d, deep epigastric vessels and conjoined tendon; e, neck of sac; f, mesoappendix.

The predisposing causes of hernia of the appendix are: Abnormal mobility of the cecum; elongation of the mesentery and sometimes of the appendix; general ptosis of the abdominal viscera and relaxation of the abdominal wall; and traction exerted on the appendix by the cecum or adherent viscera already in the sac.

The same factors that are responsible for abdominal appendicitis are also the cause of hernial appendicitis. When the appendix enters the hernial sac it is subjected to more trauma and circulatory disturbances than when it remains in the abdomen, consequently it often becomes inflamed, its walls thicken, and it becomes adherent to the sac wall or to other viscera. In inguinal hernia the exposed position of the appendix and the contractions of the abdominal muscles are responsible for considerable irritation and trauma to the appendix. In femoral hernia, the narrowness of the hernial opening, the pressure exerted by the sharp edge of Gimbernat's ligament, and the trauma due to active movements of the thigh are responsible for the early development of appendicitis in a majority of femoral appendical hernias. The danger of strangulation of the isolated appendix is increased when the mesoappendix is thick and contains large lobules of fat.

As long as the hernia is easily reducible or can be retained by a truss, the patient is usually free from symptoms. As adhesions form between the appendix and the sac wall, he notices increasing pain and discomfort referred to the appendix region in the right hypogastrium, sometimes extending to the umbilicus or to the lower border of the ribs. Because of the small size of the hernia, the symptoms are usually referred to the appendix, and the possibility of a hernial appendicitis is generally overlooked. A correct diagnosis was made before operation in less than one per cent. of the cases reported in the literature.

In acute hernial appendicitis, other symptoms in addition to pain are: Distention of the abdomen with some tenderness, but without rigidity of the abdominal muscles such as is found in abdominal appendicitis; malaise, fever, constipation and disturbances in micturition. Flatus and feces continue to pass as obstruction does not occur unless small intestine,

cecum or colon is strangulated by the hernial ring. Sometimes there is pain referred to the scrotum in inguinal appendicitis; in the femoral variety the pain may be referred to the hip joint and down the inner side of the thigh as far as the knee. Movement of the thigh on the affected side is limited and often accompanied by considerable pain. In rare instances, there is a dragging pain referred to the right iliac fossa.

In hernial appendicitis the temperature is not as high as in abdominal appendicitis, on account of the localization of the infection within the sac, which is due to the early closure of the hernial opening by the inflammatory adhesions. Hence operation is usually delayed until after gangrene has developed. Shock and collapse are not marked except in children.

The signs of noninflamed appendix in the hernial sac are almost always vague and indefinite. In the beginning the hernia is small and easily reducible; as adhesions form in the sac, it becomes tender and painful, and more difficult to reduce. There is usually a history of occasional attacks of appendicitis, with the local symptoms referred to the hernia, which is temporarily irreducible.

The symptoms of hernia of the appendix so closely simulate those of other conditions, that diagnosis before operation is often impossible. In children the appendix can sometimes be palpated in the hernial sac, but very seldom in adults. There is often a history of a small reducible tumor, and sometimes there have been previous attacks of appendicitis, when the mass became temporarily irreducible. When inflammation develops, the tender, painful, irreducible tumor gradually increases in size, accompanied by the general symptoms and local signs of appendicitis. When the inflamed appendix accompanies the cecum, colon, omentum, or small intestine into a large hernial sac, the only symptoms of appendicitis may be those of hernial peritonitis.

TREATMENT

The operation is the treatment of choice for hernia of the appendix. The appendix should always be removed and never reduced into the abdominal cavity. If it cannot be removed through the hernial opening, because only a part of it is in the sac and adhesions and immobility of the cecum prevent its base from being drawn down into view, the incision should be extended upward through Poupart's ligament in femoral hernia, and beyond the internal ring in inguinal hernia.

If perforation or gangrene has developed or if an abscess has formed, the sac should be opened and any remaining portion of the appendix removed, the wound drained and the hernia repaired at a later time. In dealing with a gangrenous femoral hernia of the appendix, Schrager stitched the sac to the skin and converted it into a drainage tube.

If gangrene has extended beyond the tip of the appendix it is not safe to try to pull the appendix down to ligate it at the base. A better plan is to make a second incision, either a lateral rectus or a McBurney, and draw the cecum and appendix up into the wound and complete the operation as for abdominal appendicitis. When the appendix can be removed through the hernial opening, it is never advisable to anchor the stump to the neck of the sac; it should be pushed back into the abdomen and covered with a piece of omentum if the latter is available.

In retrograde strangulation only the central portion of the appendix is in the sac. The tip lies in the abdomen internal to the constricting ring, and it is nearly always gangrenous and often perforated, because the constriction obstructs its blood supply at two points. The ring should be enlarged and the tip exposed and removed with as little dissection as possible to avoid spreading the infection.

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Proctostasis

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In addition to the etiological and anatomical considerations, the topical diagnosis is also of importance both in the questions of obstipation and in diarrhea. A superior and inferior portion of the colon can be differentiated on the basis of the nerve and blood supply. Such a classification may also be made for clinicodiagnostic purposes. At least the ascending colon and the descending colon and sigmoid, in addition to the rectum, clinically assume quite a characteristic and unique position also pathologically. I need only to call attention to typhlitis, typhloptosis, and typhlatony, on the one hand, and to the various well circumscribed diseases of the sigmoid, on the other, which show corresponding clinical sequelæ in anomalies of form and position, produced partly by inflammation and partly by constitutional factors. The hepatic flexure and the splenic flexure form a site of predilection for diseases. But the disease picture of proctostasis, proposed by myself some time ago, assumes a peculiar position, and that not in a topical direction alone.

Ever since I, in 1906, separated proctogenic obstipation—I so termed the affection at that time—from the large subject of obstipation, there have been added not only a number of other names (I mention only the slightly distinctive expression dyschezia of Hertz, which was also used in 1878 by Barnes for the conception of painful defecation, and which had therefore been applied for another purpose, and the expression torpor recti of G. Singer, which characterizes the nature of the affection much better) but also descriptions of the condition, which show disturbances have been included by some in the disease picture proposed by me, which have nothing in common with it. In order to show clearly that the disease picture has nothing to do with obstipation in

the stricter sense, but that it represents a special kind of disturbance of defecation, I myself have long ago replaced the term proctogenic obstipation by proctostasis.

I do not include in this conception those fecal stases in the rectum, that are produced, for example, by stenoses, fissure in ano, and other conditions. These changes bear their own peculiar names any way. At most, one could contrast them as symptomatic proctostasis with a genuine idiopathic proctostasis. Under the term proctostasis I include only that pathological condition, in which as a result of an anesthesia or hypesthesia of the nerves lying in the distal end of the rectum, the notification of the desire for emptying of the bowel does not reach the cerebrum or is not completed. The disease therefore consists of a blunting of the sensation of the scybala lying in the rectum and producing the stimulus for defecation.

SYMPTOMATOLOGY

Proctostasis is differentiated from Boas's fragmentary defecation by the fact that in the latter there is a more frequent desire for defecation, but not an anesthesia of the rectum: there is a stimulus present in the rectum, and not a weakened condition of the sensorium. This condition occurs not only in primary nervous diseases—especially neuroses—but far more often in patients with healthy nervous systems, who habitually repress their desire for stool for occupational reasons, faulty bringing up, and other causes. This disturbance is not rare if it is diligently looked for. To find it, it is usually necessary only to make a rectal examination. The finding of one or more large fecal masses with the simultaneous absence of desire for stools establishes the diagnosis.

The latter symptom is especially important, because even under normal conditions scybala may be found in the rectum at every defecation shortly before the expulsion of scybala. Under normal conditions these are experienced in the form of desire for stool. Röntgenographic examinations are not absolutely necessary for the determination of this disease picture, but they certainly reveal this very effectively. In slight and moderate grades of this disturbance the patients usually complain of only slight symptoms. These are limited usually to the sensations of pressure in the rectum and the symptom that appears striking to the patient, namely, that they have no desire for bowel evacuation. Occasionally slight signs of proctitis are also encountered. Sequelæ are usually avoided because the majority of the patients frequently go to the toilet from a feeling of duty. If this does not happen, or if there exists at the same time a weakening of the expulsive powers, quite unpleasant sequelæ may occur under certain conditions. The fecal masses may become hard, irritate the rectum and increase in size up to a giant mass as a result of the apposition of more feces with inflammatory products of the rectal wall. Such giant fecal masses, which have a waxlike and claylike consistency and are thereby differentiated from fecaliths in the stricter sense of the word, gradually produce a more or less severe and occasionally even hemorrhagic proctitis with frequent, usually small stools (socalled squirters), excruciating tenesmus, annoying sensations of pressure in the lower abdomen, and at times also pronounced dyspeptic symptoms, like anorexia, nausea, and gastric pressure, which can often undermine the state of nutrition considerably. In such cases one finds in the rectum a fecal mass ranging in size from that of an orange to that of small child's head and of the above described consistency, which can easily be rotated in the rectum because of their covering with mucus. Occasionally I have felt such a particular mass like a myoma from without above the symphysis, and in three cases there even resulted an extensive distention of the bladder as a result of compression of the urethra. Matthes also mentions a case of that sort.

PARADOX PROCTOSTASIS

In the course of time there may even occur a sigmoiditis, which liquefies the fecal masses coming from above as a result of the production of mucus, so that they can pass alongside of the fecal mass. This stage of the proctostasis, characterized by diarrheal conditions, I designated as paradox proctostasis in 1918. I have observed this paradox proctostasis almost exclusively in women with weakness of the expulsive powers. Most of these patients had been confined to bed for a long time for various reasons. In rare cases (I have observed such only twice) the fecal mass may act in the capacity of an occlusive obstruction, which produces an ascending retention of feces, so that symptoms resembling those of ileus finally occur as a result of colostasis.

THERAPY

The disease under discussion has a special practical interest also from the point of view of therapy. In the uncomplicated proctostasis (simple proctostasis), the change in the action of the rectum as a result of systematic education by the elimination of the centripetal process of inhibition is sufficient. At any rate, in the beginning a few enemas are necessary, but in paradox proctostasis enemas are not sufficient for evacuation of the fecal mass, because, on the one hand, the fecal mass is not hard enough to accomplish a passage through the anal canal when the pelvic flood is elevated by powerful expulsive movements, and, on the other, the patients avoid marked expulsive movements because of the pains produced by the inflammation of the rectal and anal walls in the attempted process of delivery. Therefore one is at first compelled to resort to a manual comminution and emptying of the mass after a preliminary application of a cocaine-belladonna-papaverin suppository, and possibly an injection of morphine. The escape is furthered by a few enemas. The crushed mass usually has a pronounced ammoniacal odor.

In the two cases of beginning ileus mentioned a surgical intervention had already been given consideration, but even in these cases the picture was changed almost immediately by the manual emptying and subsequent enemas. Diet, purgatives, and other measures usually recommended for the various forms of obstipation, are ineffective and therefore superfluous in the group of cases described. As aids intrarectal applications of electricity and vibratory massage may also be used, but it is most important that the disease be properly diagnosed and for this purpose a simple digital exploration of the rectum is usually sufficient.

The Selection of Operative Procedure in Carcinoma of the Rectum and Pelvic Colon

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In making a decision upon the type of operation to be performed for the relief or cure of this disease many circumstances fail to be considered. Here, as in all cancers, the duration of the disease is extremely important. Advanced cancer of the rectum and pelvic colon can be treated by colostomy only, and in cases where obstructive symptoms arise colostomy must always be regarded as a necessary preliminary to further operation if possible. These obstructive cases belong to the late class. Colostomy as part of a radical procedure in the removal of an early carcinoma of the rectum and pelvic colon must not be accepted as so necessary as the textbook would have us believe. The possession of this unnatural anus has obvious disadvantages, and there are few patients so afflicted whose gratitude to the surgeon overflows.

For my part, in the light of my own experience and from the writings of well known contributors on the subject of operations for rectal cancer, I am now convinced that colostomy as a part of the radical operation is a rare necessity. The sacrifice of a large length of intestine above and below the site of the tumor seems to me unnecessary and destructive, and the more so when this is accompanied by a compulsory colostomy. A considerable section of gut and mesocolon, giving a good margin of safety, may be removed and an anastomosis performed between the divided ends. Such end to end union can be performed in nearly every case of early cancer of the rectum and pelvic colon. This disease usually remains localized and wonderfully quiescent for many months and it is rather extraordinary to note how near to the actual seat of the disease the gut can be divided and freedom from recurrence obtained.

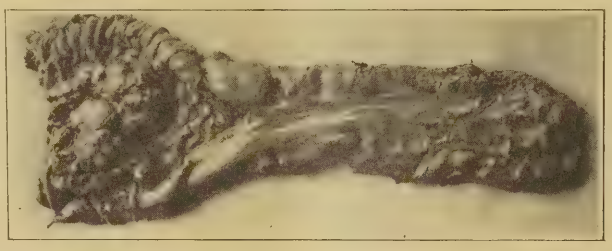

Fig. 1.—Showing the proximity of the gut section to the seat of the carcinoma (Case I).

In illustration of these statements the following cases are quoted. In each case the diagnosis was confirmed by microscopical examination at the Royal College of Physicians Laboratories, Edinburgh. Case I is illustrated to show the proximity of the gut section to the seat of the disease. (Fig. 1.)

Case I.—Miss M., aged thirty-five, had suffered for eight months from diarrhea and a frequent desire to defecate with some tenesmus.

By rectal examination, digital and sigmoidoscopic, the tumor was located in the gut above the line of reflection of peritoneum from rectum to vagina and uterus. Her pelvis had a narrow brim but a wide outlet; she was stunted in growth generally, had suffered from rickets in youth. As in female patients generally, if the cases are in the early stages the operation was easy and was undertaken by the posterior route with excision of the coccyx, but without a preliminary colostomy. Figure 1 shows the length of gut removed—the lower level of section is two and one half inches from the anal orifice, the upper level is not more than one half inch from the growing edge of the carcinoma. The pelvic colon was brought down from above and anastomosed to the rectal stump over a thick rubber drainage tube. Little shock attended the operation which was performed under a general anesthetic. Recovery was excellent. The operation was performed in 1914. She is alive and well and suffers no inconvenience in moving the bowels. I have examined her rectally at intervals during these eleven years, and could scarcely detect the line of bowel union. It must be conceded that if one half inch served as a safe margin on the proximal side of the disease, far too much gut was sacrificed below.

Case II.—Mr. T., aged fifty-eight, had complained of difficulty in moving the bowels for nearly a year. I saw him suffering from a definite degree of obstruction which passed away. He gave a history of several such attacks. The obstruction was located at practically the same point as in Case I. A preliminary colostomy was performed as low down as possible, because it was intended later to remove the gut almost up to the seat of the colostomy. The second part of the operation was done through a posterior incision with removal of the coccyx and small piece of the sacrum and the gut was removed almost up to the seat of the colostomy. The small blind piece of colon distal to the colostomy was simply closed up, sutured and the whole length of gut below, plus the anal canal and anus, removed. This operation was also performed eleven years ago. The patient is alive and well. Here as in Case I. perirectal tissue was ligatured and removed with the gut but no attempt was made to deal efficiently with possible glandular or lymphatic infection.

Case III.—Male, aged sixty. Duration twelve months approximately. Operated upon as in Case II. The patient was alive and well seven years after operation.

Case IV.—Female, aged fifty. Operation as in Cases II and III. Patient was alive and well twelve years after the operation. In these four cases the gut was divided at a point which seemed dangerously near the seat of the disease.

Case V.—Male, aged sixty. Duration of symptoms—bloody diarrhea—four weeks. Bimanual examination detected a small movable lump in the

pelvis. The sigmoidoscope revealed the tumor some distance above the peritoneal reflection from rectum to bladder. Operation through the left rectus sheath showed the tumor without peritoneal invasion about halfway between the brim of the pelvis and the bottom of Douglas's pouch. The superior hemorrhoidal vessels were ligatured in the mesocolon and the diseased section of the gut plus mesocolon were removed. Anastomosis was performed over a large rubber tube and after invagination and suture the free edge of the great omentum was lightly sutured to the line of bowel union. This patient was operated upon quite recently, and so far, the ease of procedure is the only thing worthy of comment. I feel quite sure, however, that he has as good a chance as the other patients of freedom from recurrence. To be free from recurrence without a colostomy is an extremely different matter to the patient than to be "cured" and have a colostomy. (Report on this case, Royal College of Physicians Laboratories, Edinburgh. Specimen: Tumor of rectum and glands of mesocolon showed carcinoma—no involvement of glands of mesocolon.)

I operated in a still more conservative manner recently upon an old lady seventy-six years of age when under spinal anesthesia. I exposed the ampulla of the rectum from behind, opened the gut by a longitudinal incision and excised an epitheliomatous area there as large as a crown piece. The gap was carefully closed by suture as was also the posterior incision in the rectal wall. A large rubber tube projecting into the rectum proximal to the seat of the operation was fixed by silkworm gut sutures to the perianal skin. She progressed favorably with no leakage from the rectal incisions. Her bowels moved well through and alongside the rubber tube fixed in the gut. Unfortunately, some weeks after operation she had a cerebral hemorrhage and died. It is contended that in all early cases, whether by the abdominal or by the posterior method, anastomosis of the bowel over a tube should be performed without preliminary colostomy and without extensive removal of healthy gut above and below the tumor. Thus a condition almost perfectly normal is obtained without undue risk of recurrence of the disease.

26 Viewfield Terrace.

Suppurative Colitis

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The therapeutic results of the treatment of this most difficult form of the diseases of the colon depend largely upon the stage in which the disease comes for treatment. In the less severe forms, in which the general state of nutrition is more satisfactory, and the losses of blood and the suppuration are not too severe, an improvement in some cases and even a definite cure can be expected from internal or rectoscopic treatment. Only the severe cases are suitable for surgical intervention, and this for the reason that the results of the operative treatment are poor in severe colitis.

I have had only a few cases (I have operated in only ten cases), but the noteworthy part of this material is the fact that I have been able to keep these patients under observation for many years. Of these ten patients operated upon, three died from the operation. One patient died from peritonitis, the other two died from uncontrollable diarrheas. Two cases were definitely cured. In the one case an artificial anus could be closed after existing for two years, in the other after four years. Five patients remained uncured; they still have their artificial anus and the rectoscopic examination reveals that the ulcers in the rectum and sigmoid are still active.

As long as one cannot convince oneself by rectoscopic examination that all the ulcers have healed and that there is no blood or pus in the stools, one should not be deceived into attempting to close the artificial anus. A recurrence of the severe colitis is then almost certain. I do not by any means wish to draw any conclusions from this small number of cases operated upon regarding the percentage of patients cured and dead, but, according to my experience, I must say that this operation is a dangerous one and the definite cures are rare. At the same time I must also emphasize the fact that the operative technic can consist only of a total division of the colon at the cecum, so that one can with certainty prevent the feces from passing over the diseased mucosa. The formation of a fistula in the appendix or a mere lateral incision into the colon is futile. Directly after the operation I begin with the tiresome and time consuming treatment of the diseased mucous membrane of the colon. In order to avoid stenoses, daily irrigations with solutions of boric acid or potassium permanganate are just as important as the subsequent use of the bougie in the rectum.

My results from the rectoscopic treatment of this form of colitis are considerably more favorable. The following procedure has in my hands proved to be the most appropriate in many hundreds of cases. I have abandoned the preparation of the patients with irrigations, as every introduction of large amounts of fluid into the colon constitutes an injurious irritation and hinders the healing of the ulcers that are artificially stretched in this way. Therefore I also warn against the use of irrigations in every stage of severe colitis. I treat the patient every second day rectoscopically by the inflation of a powder mixture, of which the following combination has proved to be the most useful: dermatol, fifty, tannic acid and sodium chloride, each five, and stryphnon, ten. After the insertion of the rectoscope, the mucosa is thoroughly cleansed with cotton applicators and the powder is insufflated in sufficient amounts. A two per cent. silver nitrate solution may also be used instead of the insufflation of powder, but only in the cases in which the mucosa appears torpid and presents more the picture of atrophic colitis. One should particu-

larly be very careful with the use of silver nitrate and it requires great experience to know whether the mucosa can stand the irritating effect of the silver nitrate. If one begins with the silver nitrate solution too soon, severe recurrences frequently follow. If the rectoscopic treatment is not possible for external reasons, I allow the patient to use only dermatol suppositories (0.5 gram three times daily) or dermatol—oil enemas (5.0 grams dermatol to twenty c. c. oil) at home.

In conclusion, I take the liberty of demonstrating a rectoscopic case made for me, and which contains all the instruments necessary for the diagnosis and treatment of rectal diseases. It contains three rectoscopic tubes of different diameters, the panelectroscope of Leiter, which provides an exceedingly intensive source of light from without, two applicator forceps, a balloon insufflator, a syringe for the rectoscopic irrigation of the mucosa with silver nitrate solution, and all the necessary accessory instruments.

Additional Remarks on Cholecystography

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In a paper by W. H. Stewart, E. J. Ryan, and myself, read before the American Gastroenterological Association on May 26, 1925, I gave the following summary: "Cholecystography (according to Graham) has found a permanent important place in medicine. The intravenous injection of tetrabromphenolphthalein is frequently accompanied by reactions, which at times are of a severe type. . . . The administration of tetraiodophenolphthalein by mouth or jejunum, not in large doses, is accompanied by fewer reactions, and is therefore preferable to the intravenous method."

In the same paper the authors also mentioned that no strong cathartics nor too much fasting should be employed shortly before using cholecystography, as these severe measures are apt to increase the unpleasant reactions frequently following the application of the tetraiodo salt.

Of fifteen new cases of gallbladder and digestive diseases, in which the Graham test was done according to the above mentioned rules, and the tetraiodo salt given through the duodenal tube, I have selected five for special discussion regarding cholecystography. To these will be added one case of gallbladder pathology observed at the same time, without cholecystography, in order to show the great value to the patient of a correct mode of procedure.

All the cases which will be described in this paper have been treated by me during the months of May, June, and July, 1925. It is, thus, seen at a glance that we deal here, not with rare conditions, but with common everyday afflictions. This adds to the importance of the subject in question. Permit me to describe these few cases seriatim, according to the time they were treated.

Case I.—May 7, 1925. Peptic ulcer and hydrops of gallbladder, due to cystic duct occlusion by a biliary calculus. Mrs. L. R., forty-six years old. Patient complained of attacks of severe pain in the epigastrium several hours after meals. Vomiting relieved the attack. At first the attacks occurred principally after heavy meals, and the patient would be free for weeks at a time. Later on the attacks became more frequent and severe, mostly when in the recumbent position, especially at bedtime. The patient often awoke in the middle of the night with severe pain. There was never any pain in the morning. Since youth she had had frequent attacks of heartburn and vomiting, with an acid taste. In 1905 the patient had puerperal fever. Headaches commenced to trouble the patient as soon as her digestive trouble set in. About three weeks ago there was vomiting of brownish blood. The stool was sometimes tarry black. The patient was frequently constipated.

Present condition: Stomach dilated. X ray: six hour retention. Gastric contents: free HCl=84; Ac.=102. Urine, specific gravity 1.008; albumin +, no sugar. Hemoglobin 80 per cent., red blood corpuscles 5,400,000; white blood corpuscles 7,400; polynuclears 66 per cent. D. B., May 8, 1925. Blood stain 51-54, bile 60 to end. The direct examination of the bile on May 19th showed: dark yellow brown, turbid; mucus. Microscopically—bunchberry and cholesterin crystals. The diagnosis was peptic ulcer and cholecystitis. Duodenal alimentation May 11th to 26th. During alimentation the patient felt fairly comfortable. So soon, however, as nutrition by mouth was resumed, patient began to complain of some discomfort. On May 29th there was an attack of pain requiring the hypodermic injection of morphine and a slight rise of tempertaure, 99.8° F.; on the 30th, 100.5°, May 31st, 99.0°. At this time there was distinct tenderness in the right hypochondrium. The blood showed leucocytosis of 11,000.

An acute exacerbation of an old cholecystitis in the nature of an empyema or something akin to it was diagnosed, and an operation recommended. The patient was too sick to be subjected to the Graham test. Besides, the diagnosis appeared to be well established. On June 3rd, Willy Meyer, after arriving at the conclusions just stated, performed the operation. A big stone was found in the cystic duct, occluding it completely. The gallbladder was considerably enlarged, walls much thickened, containing a slimy fluid without bile. Microscopically the fluid showed amorphous material and cholesterin crystals. A cholecystectomy was done and the patient made an uneventful recovery.

Case II.—Cholelithiasis with cardiospasm and pylorospasm; empyema of the gallbladder, with perforation in newly formed adhesions. May 17, 1925. William F., forty years old. The patient complained of epigastric pain two to three hours after meals, radiating in the back, and lasting a few hours, for the last three years. For the last two months the

patient experienced severe pain below the ensiform process immediately after and even during the meals. There was no vomiting. The patient complained a great deal of heart burn and acid taste in the mouth, also weakness and dizzy sensation. The bowels moved regularly. On account of the pain, the patient was afraid to eat and experienced difficulty in taking even the lightest foods. He lost thirteen pounds in weight during the last month. The patient had pneumonia and appendicitis twenty-five years ago.

The patient looked greatly cachectic. The chest organs were free. A swallowing sound was absent. A bougie (48 F.) encountered slight resistance at cardia and passed into the stomach. The liver was enlarged, extending three fingers below the costal margin in the right mamillary line. The stomach was dilated, extending to the symphysis pubis. Gastric contents: HCl=50; Ac.=60. String test, May 18, 1925. Bile stain trace at end; length of string 65 cm. Duodenal contents, fasting: May 29, 1925, light yellow, slightly turbid, after standing in the air becomes grey and more turbid. Alkalinity=35; A=10; S=2; T=3. Microscopically: some cholesterin crystals and bunchberry crystals, also pus corpuscles. Blood and urine showed nothing abnormal and the Wassermann reaction is negative. An x ray examination of the gastrointestinal tract showed a dilated and prolapsed stomach and six hour gastric retention.

Taking into consideration the difficulty in eating (even milk), the absence of the swallowing sound, the permeability of the cardia and pylorus to instruments, the turbid state of the bile and the gastric retention, a diagnosis of cholecystitis with secondary cardiospasm and pylorospasm was made.

By means of the pyloric dilator the pylorus and cardia were stretched in the retrograde way. The purpose of this was twofold, 1, to show that there was no real organic lesion at either of these openings, and 2, to exert a beneficial effect for the passage of food through these outlets. The patient being in a high state of malnutrition, it was thought best to institute duodenal alimentation, in order to give the patient adequate nutrition. The duodenal tube was introduced, and the patient nourished through it, as soon as it had reached the duodenum. In about ten days the patient showed an increase in weight of five pounds. He looked and felt very well.

The liver was now much less swollen. At this period the patient had a severe attack of pain in the right hypochondrium, requiring morphine by hypodermic injections. Upon examination a swelling beneath the liver was distinctly palpable, which was painful on pressure. Although clinically the resistant mass appeared to be the gallbladder, all other means of examination were used in order to make the diagnosis more definite. A barium enema allowed the x ray to show the colon in normal state. The Graham test for cholecystography was employed. No gallbladder shadow could be obtained. This negative result was taken to indicate an occlusion of the cystic duct, probably by a stone.

After a consultation with Franz Torek, who agreed with me, it was decided to operate. The operation was performed by Torek on June 6, 1925. The gallbladder was found enlarged and thickened and imbedded in adhesions. These were separated from the gallbladder, which was bluish grey in color. Some dark grey material escaped during this procedure through a perforation. The gallbladder was tied off at the cystic duct and extirpated. Two stones were found in the gallbladder, one occluding the cystic duct, the other lying in the fundus and separated from the former by tissue. The gallbladder when opened contained pus and dirty material. Microscopically the gallbladder bile contained many cholesterin crystals. The patient made an uneventful recovery and can now eat any ordinary food with impunity.

The x ray picture (Fig. 1) shows the size of W. F.'s gallbladder, imitated by gauze) and the relation of the two stones to each other.

Case III.—Cholelithiasis with digestive disturbances, hydrops of gallbladder due to cystic duct obstruction. Mrs. J. A. C. July 10, 1925. The patient had always been well until fifteen months ago, when she began to be troubled with digestive disturbances. At the time the patient had taken care of her very sick mother. She ascribed her ailment as probably due to overanxiety and overstrain. The patient would have attacks of heartburn and distress in the epigastrium lasting two or three days, and then she would feel comparatively well for a month or so, when a new attack would appear. There was never a severe attack of colic present, nor did the patient ever require a hypodermic of morphine. The patient lost about fifteen to twenty pounds in weight and a great deal in strength, not being able to fulfil her social duties. She also became constipated.

The physical examination did not show anything abnormal in the chest. The stomach was slightly prolapsed, the liver not enlarged. The gastric contents revealed: HCl plus, acidity=65; no blood. The duodenal bucket string test showed bile at the end of the string and no blood. The direct examination of the bile in the fasting condition showed: dark yellow, turbid; alkalinity=20; A=2, S=1, T=1. Microscopically: numerous cholesterin—calcium bilirubin—and bunchberry crystals; bacteria and mucus. After five per cent. peptone, slight color reaction was present, beginning at ten and ending at twenty-two minutes after the instillation. Total flow in thirty-eight minutes, seventy-five c. c., the amount of darker bile being thirty c. c. The Graham test showed a shadow, probably representing stones and a very indistinct shadow of the gallbladder (Fig. 2). Temperature, urine, and blood without any anomalies; stool negative for blood.

After a consultation with E. Cowan and Franz Torek, we all agreed that the diagnosis was that of gallstones, causing secondary digestive disturbances, and that an operation was indicated.

The operation was performed by Torek on July 20, 1925. The gallbladder was found thickened and enlarged, half the size of a man's fist. On palpation a stone could be palpated in the neck of the gallbladder and also in the cystic duct. Otherwise, in the fundus of the gallbladder, which was very tense, nothing could be palpated. There were merely a few adhesions near the neck of the gallbladder to the liver, otherwise it was free. The gallbladder and appendix were removed. Upon opening the gallbladder there was no bile in it, but seventy peasized stones and a mucopurulent fluid without any bad odor, were found in it. In the fluid sandy looking yellowish and

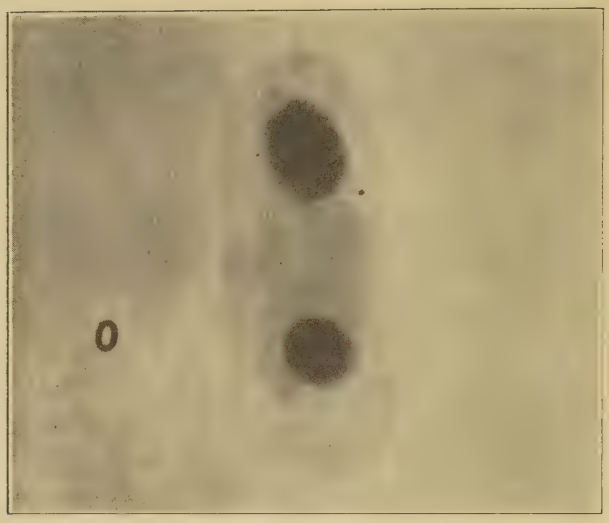

Fig. 1.—X ray photograph of the gallstones of William F. (Case II), and the relation of their position to each other in the gallbladder (the latter imitated by gauze).

greyish masses were discovered. The mucosa of the gallbladder was thickened and ecchymosed in parts. Microscopically: cholesterin crystals, mucus, and bunchberry crystals.

The patient made an uneventful recovery and now eats ordinary foods without any inconvenience.

Case IV.—Cholelithiasis with grave secondary gastrointestinal symptoms. July 17, 1925. Mrs. M. E., sixty years old, used to weigh about 150 pounds. In July, 1924, she began to feel badly, and suffered from frequent loose bowel movements, varying from one to ten daily. At the same time she lost considerably in weight. She never vomited nor did she have pain, but she felt extremely weak. These symptoms persisted until March, 1925, when the patient felt much better, having one movement a day, and increasing in weight up to 138 pounds. In April the patient went from Spain to Cuba, and while there she experienced a return of her trouble, frequent diarrhea, weakness, and loss in weight. Beginning in July, she weighed only 120 pounds, and came to New York for treatment. She had frequent diarrheal movements and great weakness.

On examination the patient looked pale. The stomach extended to about one or two fingers' width below the navel. The liver was not enlarged. The gastric contents showed: HCl=none; acidity=25; rennet, plus, no blood. The string test showed bile at the end of the string and no blood. The stool was negative for blood; the urine normal. The blood showed signs of secondary anemia.

The duodenal contents examined in the fasting condition on July 17th showed: light yellow, slightly turbid; blackish and brownish particles. Alkalinity=20, A=10, S=3, T=4. Microscopically the particles consisted of calcium bilirubin and numerous cholesterin crystals. After five per cent. peptone, good color reaction began at ten and ended at twenty minutes after instillation. The total flow was 40 c. c. in twenty-six minutes; the dark bile amounting to twenty five c. c. The digestive test capsule was recovered in the stool after nineteen and one half hours. Everything had disappeared excepting fat and thymus, but there were no nuclei present. An x ray of the stomach showed an abnormal sacculation of the fundus, but *no* real defect. The Graham test failed to show a gallbladder shadow.

Based principally on the findings of the direct examination of the bile and supported by the result of the Graham test (which gave *no* gallbladder shadow) a diagnosis of cholecystitis with stone (probably in the cystic duct) was made. In view of the grave symptoms of the patient an operation for removal of the gallbladder and a thorough exploration of the abdominal cavity was recommended.

The operation was performed by Torek on July 24th. The anterior end of the spleen was pointed instead of being rounded. (This might have accounted for the deformity of the stomach found by the x rays.) The omentum was firmly adherent to the gallbladder, and the latter was adherent to the liver. The gallbladder was not much enlarged, nor thickened. In the fundus an elongated oval stone (Figs. 3 and 4) could be felt. The gallbladder (fundus) appeared to be divided into two portions as if having an hourglass contraction at the end. When the gallbladder was opened a big stone, the size of a pecan nut, was found. The mucosa was congested. There was an opening leading to another division of the fundus. The cystic duct was free. The bile was tarry looking. Microscopically: many cholesterin crystals, few calcium bilirubin, and bunchberry crystals. A cholecystectomy was done. The patient made a rapid recovery.

Case V.—Tumor of pancreas of doubtful character, causing common duct obstruction with jaundice. Gallbladder immensely dilated and thickened. July 22, 1925. Jacob G., fifty-six years old, began to complain of indigestion and gastric distress in 1919. The patient had to resort to large quantities of bicarbonate of soda to get relief. For the next few years the symptoms mentioned would appear oft and on for a few weeks, with free periods of intermission in be-

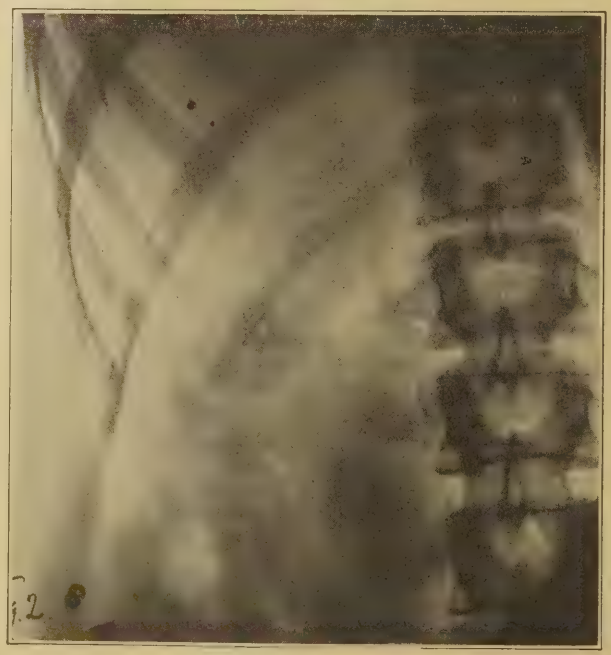

Fig. 2.—X ray photograph of Mrs. J. C. (Case III) after instillation of sodium tetraiodophenolphthalein into the duodenum. A sharp shadow consisting of several round bodies is visible in the gallbladder region, in the same area a faint outline of gooseegg size is noticeable. Scantily visible shadow of the gallbladder, with a distinct accumulation of stones therein.

tween. The pains were never very severe. The patient weighed 160 pounds when his trouble commenced. Three months ago the patient began to suffer more severely. The pain became more acute, the appetite disappeared almost completely, and the patient lost considerably in weight. For the last six weeks the patient became jaundiced. There were no attacks of colicky pains in the upper abdomen, nor any rise of temperature. When admitted to the hospital on July 23, 1925, the patient's weight was 113 pounds.

The patient looked greatly emaciated and distinctly icteric. Thoracic organs were normal, with the exception of the heart which was slightly dilated to the right. The abdomen was soft and somewhat caved in. The stomach extended to the symphysis (splashing sound). The liver was enlarged, overlapping the right costal margin by two to three fingers' width. A soft resistant mass of oval shape stretching beneath the border of the liver of hen's egg size could be easily mapped out. The urine contained bile and urobilinogen, no albumin or sugar. The blood showed some anemia and leucopenia. Wassermann, ++. The gastric contents showed: HCl+, Ac. 105, no blood.

X ray of stomach showed slight six hour retention and lack of peristalsis at the pyloric portion of the stomach. The duodenal bucket string test showed a trace of bile at the end of the string, no blood. The duodenal contents examined in a fasting condition on July 25th showed: 15 c. c. light yellow, neutral, containing several blackish particles. Microscopically: cholesterin and bunchberry crystals; big conglomerations of cholesterin crystals; a few pus corpuscles and epithelial cells. After sixty c. c. of five per cent. peptone, no bile; all specimens acid, two containing free HCl. Microscopically: many bunchberry crystals, few cholesterin crystals. The Graham test failed to show a gallbladder shadow. As to diagnosis, the gradual development of jaundice without attacks of colic made me think of a possible neoplasm of the gallbladder, while the long history of disease and the findings of the direct examination of the bile seemed to favor a benign condition.

Before resorting to an operation which was indicated, it was decided to improve the general condition of the patient by duodenal alimentation and instillation of fluids; for, otherwise, the patient was in too weakened a condition to stand the strain of surgery. The patient improved quickly under this régime, and on July 29th Franz Torek performed the operation. The gallbladder was found to be three quarters the size of a man's fist, intensely filled with a dark black tarry bile. The pancreas was hard and nodular; the duodenum not movable; firmly connected with the pancreas; no stones palpated in the common bile duct. The cause of the obstruction was the pancreas. A cholecystgastrostomy was done.

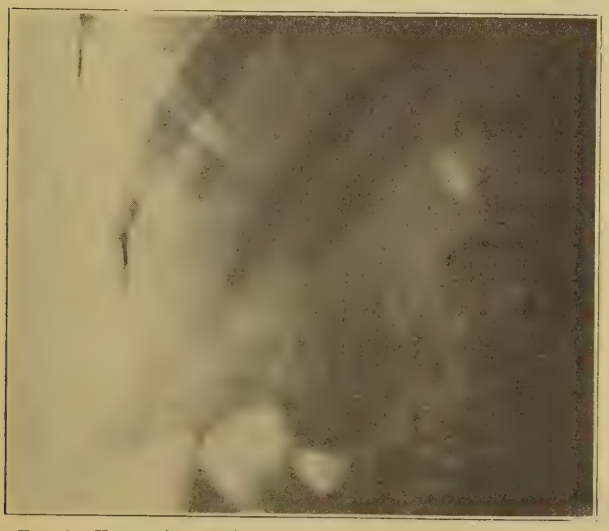

Fig. 5.—X ray picture of the gallbladder of Mrs. E. N. (Case VI) after duodenal instillation of 0.75 grams of sodium tetraiodophenolphthalein. Notwithstanding the small amount of the tetraiodo salt, the gallbladder is distinctly visible.

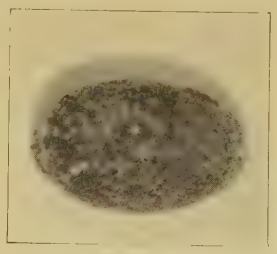

Fig. 3 A

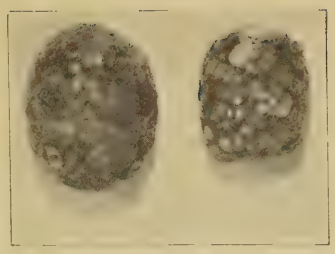

Fig. 3 B

Fig. 3.—A. Mrs. L. R., July 3, 1925, operated upon by Willy Meyer. Large stone in cystic duct; gallbladder enlarged, thickened, containing slimy fluid without bile. Graham test not made. B. W. F. July 5, 1925, operated upon by Franz Torek; two big stones found in the gallbladder, one occluding cysticus; gallbladder enlarged, thickened, containing pus; gallbladder had perforated into adhesions. Graham test showed no gallbladder shadow. Illustration, natural size.

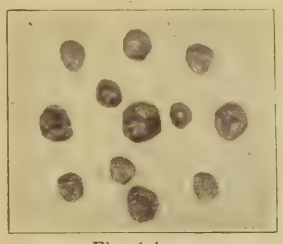

Fig. 4 A

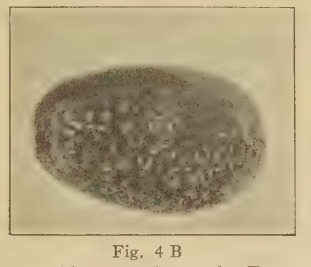

Fig. 4 B

Fig. 4.—A. Mrs. J. A. C., July 20, 1925, operated upon by Franz Torek; gallbladder enlarged, thickened, containing no bile, but mucus, sand, and stones (about seventy peasize) one in cystic duct occluding it. Graham test: stones visible, gallbladder shadow not distinct. B. Mrs. Margarita E., July 24, 1925, operated upon by Franz Torek; big stone in gallbladder, bile tarry, not very turbid; cysticus free. Graham test: no gallbladder shadow. Illustrations, natural size.

Examination of the bile aspirated from the gallbladder during the operation showed an alkalinity—90; specific gravity—1040. Microscopically: amorphous bunchberry and occasional closterin crystals; some calcium bilirubin crystals; no bacteria. The tube was left in place during the operation and alimentation resumed through it the day following. The patient stood the operation nicely and was recovering when he was seized by pneumonia and succumbed.

Case VI.—Gastric ulcer and chronic cholecystitis. July 15, 1925. Mrs. E. N., about forty years old, complained of gastric distress and incessant eructations for two to three years. The string test showed a blood stain on the string not far distant from the cardia. The bile examined in the fasting condition showed: yellow, turbid, alkaline, contained several small blackish particles, which microscopically showed to consist of mucus, calcium, bilirubin, and bunchberry crystals.

The diagnosis was gastric ulcer and chronic cholecystitis. Duodenal alimentation gave the patient much relief. The Graham test was done, with 0.75 of the sodium tetraiodophenolphthalein, as the patient vomited the tube after the installation of the above solution. The gallbladder, however, was distinctly visible, even with this small amount. (Fig. 5.)

REMARKS

In reviewing the cases just described, we find the first three dealing with distention and thickening of the gallbladder of a serious type. In one of these there was perforation of the gallbladder wall in the freshly formed adhesions (Case II, W. F.); in the other two, hydrops. In all three there was cystic duct obstruction caused by a biliary calculus. In two of these, in which the Graham test was done, cholecystography showed in one *no* gallbladder shadow whatever, and in the other, an accumulation of stones in the gallbladder area and a very faint outline of the vesicula fellea, not as sharp by far as would be usually encountered in ordinary gallbladders. This failure to obtain a gallbladder shadow would be expected in cystic duct obstruction, for the bile carrying the tetraiodo salt cannot enter the gallbladder. The faint outline in one is due to some of the salt reaching gallbladder walls by way of general circulation.

Case IV (Margarita E.) deserves special mention. The course of the disease was very irregular. There were clinically no symptoms of cholecystitis present. The direct examination of the bile gave positive findings. The Graham test (no gallbladder shadow) appeared to speak for stone in the cystic duct or for some other form of occlusion of this outlet. In view of the possibility of malignancy, an operation was indicated. At the operation the diagnosis of cholecystitis with probable stone was found correct, but the assumption of occlusion of the cysticus (by a calculus) was not correct, the cysticus being perfectly free. How to explain the failure of entrance of the sodium tetraiodo into the gallbladder—excepting by a spasm provoked by the calculus lodged in the fundus—is difficult to say. It is, however, of great import to know that such cases occur.

Case V (Jacob G.) of tumor of the pancreas with jaundice, caused by common duct obstruction with an immensely dilated and thickened gallbladder filled with stagnant bile, failed to give a shadow by the x ray after the Graham test. Inasmuch as the cysticus was free, we would, at first thought, think that a gallbladder shadow should have been produced here. Taking into consideration, however, the high degree of bile stagnation in the vesicula fellea so that the latter was filled to its maximum and not a drop of fluid could enter it, the liver bile carrying the tetraiodo salt had to go back to that organ and from there to the general circulation. It is natural that even without a real closure of the cysticus, the gallbladder could not be shown by the Graham method.

Case VI (Mrs. E. N.) has been cited, in order to show how small a quantity of the sodium tetraiodophenolphthalein given by the duodenal tube is at times sufficient to render the gallbladder visible to the x rays. The amount given in this particular case was 150 c. c. of a one half of one per cent. solution of sodium tetraiodo, or 0.75 gm. of this salt.

In conclusion, this paper seems to show the comparatively frequent occurrence of severe gallbladder lesions, the help we derive for the recognition of these ailments from the clinical history supplemented by the usual methods of examination in conjunction with the direct examination of the bile and the Graham test, and ultimately the great benefit in these cases of appropriate surgery. With regard to cholestography, there must be a fresh flow of bile entering the gallbladder, in order to make it feasible. When this is not the case, no matter whether due to cystic duct occlusion or to other causes, there may be at times a faint outline of the gallbladder obtainable, but never a real good picture.

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The Differential Diagnosis Between Cancer and Other Gastric Conditions Essentially Associated with Subacidity*

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The importance of a correct diagnosis of gastric cancer is so thoroughly appreciated by the lay and professional world that discussion of this point is unnecessary. While, however, a typical advanced case is readily recognized, the definite diagnosis of early and of moderately advanced gastric cancer is at times difficult and even impossible prior to operation or autopsy. Often, too, noncancerous conditions are mistaken for cancerous, and since the prognosis in the former, when properly treated, is almost invariably more favorable than in the latter, the importance of differentiation is obvious.

These pseudocancerous conditions are very numerous and it is manifestly impossible to consider them all in a brief presentation. I have, therefore, chosen for this discussion one of the most important intragastric groups, namely, those diseases that have as an integral part of their clinical picture a deficient or subacid state of the gastric juice. It is well known that not all gastric cancers are accompanied by subacidity: a rather considerable proportion, during their early stages at least, show a normal or even very high amount of hydrochloric acid upon test meal examination. Nevertheless, the classical conception of cancer includes a diminution and subsequent disappearance of normal acidity and its later replacement by lactic and other organic acids. This is the type of cancer referred to in the present paper. The rapid diminution of the gastric secretion is most probably due to the fact that cancer originates in the epithelial or glandular elements of the stomach, and is very early associated with an infiltrating gastritis, thus adding catarrhal products to the cancerous ones. In the leather bottle, and other extensive sclerotic types of gastric cancer, a complete achylia is present.

*Read before the Section on Gastroenterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, May, 1925.

To aid in distinguishing between the subacid type of cancer and other subacid gastric conditions later to be named, it is necessary first to discuss briefly the chief clinical manifestations of this form of gastric cancer.

SUBACID TYPE OF CANCER

It is an affection of middle or advanced life with a continuous and rapidly downward clinical course. Usually there is no history of previous gastric complaint, though not infrequently a precancerous suggestion of ulcer, or, more rarely, of gastritis, is obtainable. Gastric cancer is characterized by very marked decrease in appetite, weight and strength, by anemia and cachexia, by gastric distress or pain, not necessarily associated with meals, and by vomitus or stomach contents showing diminished or absent hydrochloric acid, which is frequently replaced by lactic and other organic acids. The stomach contents often also contain blood, excessive mucus and decomposition products, together with stagnant masses and foreign microorganisms. Occasionally, tumor fragments are found in the vomitus or the lavage water, especially in the softer types of the growth. As a rule, the tongue is heavily coated, the breath foul and the gums in poor condition. With the occasional exception of Virchow's gland in the left supraclavicular region, it is rare to find any palpable enlarged surface lymphatic glands.

TYPICAL GASTRIC CANCER

In advanced typical gastric cancer the abdomen is sunken and readily palpated. Inspection and palpation reveal a more or less extensive tumor mass in the stomach area. This mass is hard and irregular in shape; its surface may be smooth or nodular, and it is usually tender to the touch. Depending upon its situation and other associated factors, the tumor may or may not move with respiration and digital palpation. It should, however, be remembered that even a very large and inoperable growth in the socalled silent area of the stomach, i. e., behind the left lobe of the liver, may elude most careful palpation even under general anesthesia. Here the diagnosis must rest upon the history and the physical condition of the patient, together with the laboratory and röntgenological findings.

SCLEROSING TYPES OF CANCER

In the sclerosing types of cancer the walls of the stomach are very much thickened and hardened and the entire organ shrunken in size with an almost obliterated lumen and a patulous pyloric orifice. The stomach, therefore, in these cases presents a very hard tumor mass, whose contents are small in amount and rapidly pass into the duodenum without detectable peristaltic action. In cancer involving the cardiac opening, the stomach generally is also markedly decreased in size. Tumors at the pylorus are as a rule associated with mechanical obstruction and secondary dilatation of the stomach. Here there is not only the tumor mass itself, but also the well known manifestations of gastrectasia, namely, greatly enlarged stomach outlines, more or less visible and palpable peristaltic overactivity (socalled peristaltic stiffening), splashing sounds, gurgling, retained stomach contents in the fasting state, massive vomiting, and other symptoms.

EXAMINATION OF THE BLOOD

Parallel with the progress of disease there develops a secondary anemia, which, in advanced cases is so profound as strongly to suggest the primary pernicious form of anemia. Thus far, all investigations for the discovery of something in the blood specific for cancer have proved disappointing. On the other hand, the discovery that gastric cancer yields a protein digesting ferment has led to the introduction of the Salomon and the Wolff-Junghans tests for the differential diagnosis between malignant and benign achylias. The latter test for soluble albumen is especially valuable and should be better known and more frequently employed. It is easily carried out, inexpensive and requires but little time. Smithies (1) found it positive in eighty per cent. of 230 cases of operatively or pathologically demonstrated gastric cancers. Friedenwald (2) and others have also found this test most serviceable.

RÖNTGENOLOGICAL EVIDENCE

The scope of this presentation precludes a detailed discussion of the röntgenological diagnosis of gastric cancer. Medical literature is flooded with such descriptions. Undoubtedly röntgenology has proved of immense value in this connection, often revealing the presence of a tumor not distinguishable through other clinical methods. This applies more particularly to lesions involving the orifices and curvatures. Here, in the nonulcerous type, the rays are very dependable in the early as well as in the late stages of the disease. In central cancer of the fundus, especially of the posterior wall, they cannot always be depended upon, for not infrequently they fail to show early and even late tumors located there. Often, too, exploration reveals a far greater extent of the growth than indicated by the röntgenological examination. Positive evidence in early or doubtful cases always calls for exploratory laparotomy. Where negative röntgen ray findings contradict strong clinical and laboratory evidence, the patient ought to be kept under close supervision and control. Unless there is a speedy improvement he should be surgically explored.

DIFFERENTIAL DIAGNOSIS

The data already mentioned as associated with a typical advanced case, are, taken collectively, so characteristic that when for the most part present, the diagnosis is readily made. Frequently, however, a few or even most of the characteristic data are absent, and it may be impossible at the time to establish a correct diagnosis short of laparotomy and histological examination of any presenting tumor. The great importance of the histological examination cannot be sufficiently emphasized. There is so much at stake concerning the prognosis, the correct operative procedure, and, not infrequently, the real diagnosis of the diseased condition, that a histological examination should always be demanded. Instances can be multiplied where the operative diagnosis of cancer, based upon the presence of a very hard and large tumor mass, was refuted by the subsequent career of the patient, or by the report of the histologist or serologist. On the other hand, exploratory and postmortem examinations have sufficiently often disproved the presumptive diagnosis made by the internist of an "unquestionable case of cancer of the stomach."

For the purpose of simpler discussion the differential diagnosis will be considered under two headings, namely, 1, conditions in which a tumor mass is present, and 2, those in which there is no tumor mass present. The first division includes sarcoma, benign tumors, tuberculosis and syphilis; the second chronic gastritis, benign functional achylia and pernicious anemia. Gastric ulcer is omitted because hyperacidity and not subacidity is an integral part of its clinical picture. A detailed discussion of its differential diagnosis has been published elsewhere by me (3).

CONDITIONS IN WHICH A TUMOR MASS IS PRESENT

The presence of a tumor mass, definitely proved to be gastric, is the most important physical sign of gastric cancer. When associated with marked emaciation, cachexia and the characteristic laboratory and x ray findings, the diagnosis becomes almost a certainty. It should be borne in mind, however, that any variety of intragastric tumor and also some extragastric ones that cause pressure upon the stomach, can give rise to almost identical physical phenomena, so that a differential diagnosis may be extremely difficult or even impossible, without resorting to exploratory incision or autopsy. Even in the last eventuality, we may, as already pointed out, have to await a histological determination.

Sarcoma.—This is considered very rare, but must occur far more frequently than the records tend to show. Many cases diagnosed as carcinoma undoubtedly are sarcoma. Thus Perry and Shaw (4) through later histological investigations of a series of fifty cases classified in Guy's Hospital as cancer, proved that four of them were really round celled sarcomas. Statistics indicate that primary sarcoma seldom attacks the stomach before the fourth decade of life and most frequently between the ages of fifty and sixty. It is a much more slowly growing neoplasm than cancer and in relatively early cases offers a far better chance for radical cure.

Unfortunately there are no definite diagnostic criteria even for a far advanced gastric sarcoma. Correct diagnoses have only been made through operation, or preoperatively through histological examination of tumor particles found in stomach contents, or perhaps through excision of a metastatic growth in the rectum, skin, glands, etc. (5).

Gastric cancer and sarcoma have many characteristics in common, such as the earmarks and accompaniments of malignancy, the alterations in gastric structure and functions, the occurrence of hemorrhages, metastases, splenic tumors and febrile states. Since sarcoma, however, arises from the nonepithelial or intramural tissues, the mucous membrane is usually not involved or, if so, only secondarily through pressure or erosion. Secretory disturbances are, therefore, more typical of cancer and are not among the diagnostic criteria of sarcoma. Cancer is more frequently located at the orifices and in the body of the stomach, sarcoma oftener along the curvatures; hence cancer is more apt to be associated with stenosis. Pyloric obstruction, when present in sarcoma, is usually a late complication and due to massive infiltration of the stomach walls rather than to a real pyloric stenosis. According to Haudeck (6), sarcoma spreads flatly throughout the walls of the stomach and does not project into its lumen; it therefore causes no filling defect and presents no visible radiological indentations. In other words, the stomach presents a smooth and rigid wall and a wide lumen.

Benign tumors.—These are relatively infrequent, but probably less so than is generally assumed. I have encountered four cases, three of which were preoperatively diagnosed. Eusterman and Gentry (7) reported twenty-seven cases observed in the Mayo Clinic between 1907 and 1921, being 1.3 per cent. of the 2,168 gastric tumors that came to operation there during that period of time. This does not, however, indicate the actual ratio between benign and malignant gastric tumors, for many other malignant cases were inoperable, while other benign tumors were undoubtedly regarded as malignant ones and declined operation or were refused as inoperable.

Benign tumors are included in the present discussion, because they are frequently associated with achylia, marked dyspeptic symptoms, slight or severe hematemesis or melena, pain, profound anemia and loss in weight. Often a palpable tumor is present. Thus, we have a clinical picture that strongly suggests and frequently has been diagnosed as gastric cancer. In addition, the radiological examination reveals a shadow defect that appears to confirm this diagnosis and often has been so reported.

Undoubtedly these tumors may remain quiescent for many years, and not infrequently become clinically active during the cancer years. When situated in the pyloric region, especially if pedunculated, they tend to prolapse into this opening and through a ball valve action, cause complete obstruction with corresponding physical disturbances—namely, gastric distention, food retention, gastrosuccorrhea and peristaltic rigidity.

The one sure means of diagnosis is, of course, the accidental finding and examination of a tumor fragment in the vomitus, stomach washing or feces. Next to this, and short of autoptic exploration, our dependence must be placed upon röntgenology. The first publication on the radiological diagnosis of these growths without prior findings of tumor fragments in the stomach contents, was mine in 1916 (8). While experience is not yet sufficiently extensive to enable the formulation of rules for the differential diagnosis of all types, the following may be said to be the röntgenological characteristics of the pedunculated varieties: 1. In benign tumor, the outlines of the defect are sharp and not ragged or irregular as in cancer. 2. The greater and lesser curvatures are not implicated in the defect, and there is no break in the peristaltic wave—a pathognomic sign first pointed out by Holmes (9). 3. With change in posture, the plates show a change in the size and position of the filling defect, indicating a shifting of the tumor. 4. In cancer of the stomach the shadow is uniformly opaque, whereas in the softer types of benign polypi or angiomata the shadow is translucent, presents a mottled appearance and sometimes even permits a view of the barium filled coils of small intestines that lie behind the tumor mass.

Where x ray findings indicate a large tumor, while the associated clinical phenomena are not as severe as those which usually accompany advanced cancer, the alternate possibility of benignancy should receive immediate consideration. When cancer shows a large filling defect, the disease has already so far advanced that the other characteristic clinical signs are unmis-

takable. Where, however, these characteristic signs are absent, a large shadow defect points to benignancy and an exploratory operation should be advised immediately.

Surely the subject is of sufficient importance to engage the more earnest attention of the profession, so that we may not continue to condemn as "inoperable cancers," patients who can be saved by a timely exploratory gastrotomy and the removal of a benign tumor.

Tuberculosis.—Under this heading, functional dyspeptic disturbances, so common in advanced pulmonary tuberculosis, are not considered, but only actual pathological lesions that occur in the stomach through primary or secondary invasion of that organ by the tubercle bacillus. The ulcerative and the miliary tubercle types do not simulate cancer; hence, they are left out of the present discussion. In all types the pyloric region is mainly affected. The hypertrophic and the hyperplastic forms, when affecting the epithelium, often give rise to a widespread adenomatous proliferation, and, when involving the submucosa or the deeper layers of the gastric wall, result in a diffuse hard inflammatory infiltration and thickening, or in a circumscribed tumor mass that frequently causes pyloric stenosis.

In themselves these changes sufficiently simulate cancer, but the resemblance is enhanced through associated multiple lymph gland enlargements and perigastric adhesions to surrounding structures. These adhesions are at times very extensive, and bind the stomach and adjacent structures into large irregular and more or less dense and inseparable tumor mass, that has often been mistaken for cancers even by careful observers. Alexander (10), Albu (11), Van Wart (12), Severin (13), and others have reported operations on supposedly gastric cancers that proved to be tuberculosis. This is not surprising when we realize that there are no pathognomonic symptoms of gastric tuberculosis and that it has many manifestations in common with gastric cancer. In both affections the clinical history is short and there is marked emaciation, vomiting, lack of appetite, progressive weakness and increased dyspepsia after solid food. The gastric contents in these tuberculous tumors very frequently show absence of hydrochloric acid and the presence of lactic acid, as well as of occult blood, coffee ground sediment and food stagnation. The röntgen rays may show shadow defects like those of cancer.

When symptoms of gastric cancer are present in a patient with active tuberculosis of some other part of the body, the probability that the gastric lesion is tuberculous rather than otherwise should always be borne in mind. A diagnostic point is that the period of predilection for cancer is after the age of forty, while that for gastric tuberculosis is before thirty. Probably, too, the Wolff-Junghans test is negative, though reports on this fact are lacking in the literature.

Syphilis.—Tertiary syphilis can produce gastric lesions closely simulating cancer. These include small and large multiple gummas, infiltrating sclerosis and ulcerations, with resulting tumor formations, fibrous hyperplasia, often very extensive, of the various layers of the stomach, gastritis or even atrophy of the mucous membrane, varying degrees of induration and thickening of the walls, hourglass and other mutilating deformities, as well as more or less extensive perigastric adhesions. Pathologically, these changes very much resemble those of tuberculosis, just considered. They, too, favor the pyloric region. Hemmeter (14), Muehlmann (15), and Suermondt (16) have reported luetic stomachs so thickened and shrunken that the capacity of each was very considerably reduced. Such stomachs, as Sailer (17) pointed out, cannot be distinguished grossly from linitis plastica and some types of scirrhous cancers.

The differentiation from cancer is most important because of the prognosis and the therapeutic outcome. It is very difficult and in the advanced cases may be impossible short of histological examination. In both conditions there may be gastric pain, vomiting, nausea, hematemesis, melena, pallor and marked loss in weight, gastric tenderness, the presence of a tumor, pyloric obstruction, pronounced subacidity or achylia and very similar x ray findings. The pain in the uncomplicated gummatous ulcerlike type, as in benign ulcer, comes on from one to three hours after meals, while in the more complicated cancerlike forms it is constant as in that disease, and is not relieved or only slightly so by food ingestion, and oftener made worse thereby. Nausea is relatively uncommon, as are also hematemesis and melena, although severe and even fatal hemorrhages have been reported. Loss in weight appears to be a definite accompaniment of the cancerlike forms of gastric syphilis, fully equalling that of cancer. An important point, however, is that the anemia and weakness are usually relatively mild and not in keeping with the emaciation. Subacidity, or achylia, is almost always found in advanced organic gastric syphilis. This fact has been emphasized by Hausmann (18), Neugebauer (19), Eusterman (20), Clark (21), and many others. The Wolff-Junghans test is inconstant, according to Smithies (22), who would reserve it rather as a confirmatory finding in cancer. He has found a low formol index fairly constant in gastric syphilis and suggests it as "promising to furnish an important point of differentiation from malignant lesions" in which he finds it to be much higher.

As may be expected from the pathological changes, the röntgenological findings in advanced luetic conditions are very suggestive of gastric cancer. They include filling defects, infiltrations, hourglass and other mutilating deformities, multiple strictures, shrinkage of part or the entire stomach, adhesions, secondary esophageal dilatation, etc. These findings have been very fully described by Le Wald (23), Mills (24), Eusterman (20), and others. All agree that the röntgenological evidence, though most suggestive, especially in experienced hands, is insufficient *per se* for differentiation from malignancy, and must be interpreted in connection with all the other clinical data.

The diagnosis, therefore, must depend chiefly upon a history of a specific infection, the evidence of luetic stigmata and especially upon the serological tests. The history, as is well known, often falls short of desired facts. Other luetic stigmata, if present, are most suggestive. A clinical diagnosis, whenever made, has been based upon a positive serological test or the result of specific therapy. The latter method, however, is not conclusive evidence unless it results

in a cure or a decided and lasting improvement of all but the irremediable sclerosed conditions. The serological test, especially a consistently positive reaction, is after all our greatest dependence for a diagnosis of gastric syphilis.[1] It must be remembered, however, that in syphilitics nonspecific gastric lesions may and frequently are developed. Cases of coexisting lues and cancer have also been reported in medical literature (25). Finally, too, a negative serological reaction does not necessarily exclude possible gastric syphilis.

CONDITIONS IN WHICH A TUMOR MASS IS NOT PRESENT

Chronic gastritis.—The fact that a catarrhal state always accompanies cancer, may at first give rise to some speculation when one encounters a gastritis in a person within the cancer age. In both diseases test meal examination reveals excessive mucus and diminished gastric acidity. Here the present histories, and the previous histories more so, are of prime importance. There is the same lack of appetite, especially the aversion to meat, and similar dyspeptic complaints, such as gas pressure, bloating, belching, nausea, etc. In cancer, as a rule, these disturbances are constant and of recent origin, while in gastritis they are of long duration and directly associated with food ingestion. In cancer, too, there is a more pronounced suggestion of serious constitutional disease. The point tenderness in cancer is local, while in benign gastritis the tenderness, if present at all, extends more or less over the entire gastric area. During the early stages of the hemorrhagic form of gastritis, differentiation from cancer is difficult and may be impossible. Later on it is easier, owing to the development in cancer of a tumor or a local resistance with tenderness, of a positive Wolff-Junghans reaction, of lactic acid, stagnation of stomach contents, etc. The x ray findings are, of course, essentially different in the two diseases and should very soon clear up the differential diagnosis.

Benign (functional) achylia gastrica.—This is differentiated from cancer by the longer history, the better appetite and physical well being and the absence of real pain. In benign achylia the patients with good stomach motility are generally well nourished and even plump. There is usually a tendency to diarrhea and other intestinal upsets. In cancer, vomiting is common; in benign achylia, rare. In cancer the tongue is coated, the breath foul and the gums usually in poor condition, while in benign achylia, the mouth conditions are normal. The stomach contents and feces in benign achylia lack the presence of blood, so characteristic of cancer; lactic acid, too, is absent and the Wolff-Junghans reaction negative. Tumor formation, resistance or decided point tenderness are not associated with simple benign achylia. As a rule, in cancer the x ray findings are positive and generally diagnostic, while they are negative in benign achylia gastrica.

Pernicious anemia.—This, strictly speaking, is not a stomach affection, but the gastric changes are so constant as to form an essential part of the disease and to be regarded by many as standing in etiological relationship. Clinically, pernicious anemia very closely simulates gastric cancer, and in the absence of a palpable tumor, particularly in the early stages of cancer, a differentiation is at times most difficult or even impossible. With a positive blood picture of pernicious anemia on the one hand, or a typical röntgenogram of cancer on the other, the diagnosis is at once cleared up. But frequently x rays and blood findings are atypical, and the problem becomes most puzzling. I have enountered cases where a correct diagnosis was possible only through autopsy or exploratory laparotomy. For while the anemia of cancer, even when profound, is always secondary, definite criteria of a primary type of anemia are at times lacking in the pernicious variety. A point of great value is that in cancer, the patients, with very few exceptions, markedly and progressively emaciate, while in pernicious anemia, even in exitus, the patients though very pale, usually remain relatively stout.

In pernicious anemia, too, a complete achylia of the benign type is almost invariably present, and what has been mentioned under benign achylia in regard to the differentiation of the stomach contents, applies equally well here. The presence of any diagnostic tumor fragments in the vomitus or the stomach contents at once clears up the diagnosis, but unfortunately, this is a very rare finding in relatively early cancer cases.

SUMMARY

In the *average* case within this subacid gastric group a detailed study, utilizing the elaborated diagnostic criteria outlined above pertaining to the history, the physical and laboratory findings, combined wherever possible with a complete röntgenological examination, will readily suffice to establish a definite diagnosis for or against the presence of a gastric cancer. Occasionally an extremely atypical case that baffles the skill of the most experienced and expert diagnostician will be encountered, and a correct diagnosis prove impossible short of surgical and perhaps, too, of histological investigation. Between these extreme types one not infrequently meets with cases that puzzle the average investigator. Here clarification of the situation can be arrived at only through most painstaking attention to every diagnostic detail, coupled with intelligent application of past experience, bearing well in mind all conditions that may possibly fit into the clinical picture.

CONCLUSIONS

1. Unless the presence of a cancer in the stomach has been positively established, the possibility of a noncancerous process should receive equal consideration.

2. Exploratory laparotomy is particularly urged whenever a careful study of a suspicious subacid case presents some feature which does not fit into the classical picture of gastric cancer.

3. This is particularly true in very early cases, for whether the process be cancerous or not, other things being equal, the patient's chance for recovery in surgical gastric affections is in direct proportion to the timeliness of the operative procedure.

[1] In March, 1923, at a meeting of the Bronx County Medical Society, Dr. L. T. LeWald gave a lantern slide exhibition of Spirochæta pallida found postmortem in the stomach wall of a patient who had been refused surgical intervention because the case was considered an "inoperable cancer." According to Dr. LeWald, this was the first histological demonstration of the kind.

A complete bibliography will be included in the author's reprints.

Instruments, Apparatus, and Clinical Notes

Clinical Applications of the Duodenogram*

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Radiographic study of the contour of the entire duodenum beyond the first portion, has been difficult, because of the failure to visualize it in an isolated and unobstructed manner. Ordinarily two main difficulties are encountered, when the ingested barium suspension is employed. In the first place, the flow of barium from the stomach into the duodenum is intermittent, because of the controlling function of the pyloric sphincter. In addition the barium as it reaches the duodenum is rapidly hurried on its way. Thus, a complete homogeneous filling of the entire duodenum is rarely ever obtained. In the second place the barium filled stomach, by overlapping, frequently obscures part of the transverse duodenum and duodenojejunal junction. I have devised a simple means for overcoming the two difficulties mentioned. An ordinary rubber duodenal or intestinal tube is employed. The distal ten inches of tubing is severed and is perforated with numerous small holes, each about as large as the lumen. This piece of tubing is then joined to the larger piece of rubber, by means of a small metal connection. The tube is swallowed by the patient and the end allowed to reach the duodenum after the ordinary manner of duodenal intubation. The purpose of the metal connecting piece is to ascertain whether the beginning

FIG. 1.—Duodenogram obtained in a patient of hyposthenic habitus.

FIG. 2.—Duodenogram obtained in a patient of sthenic habitus.

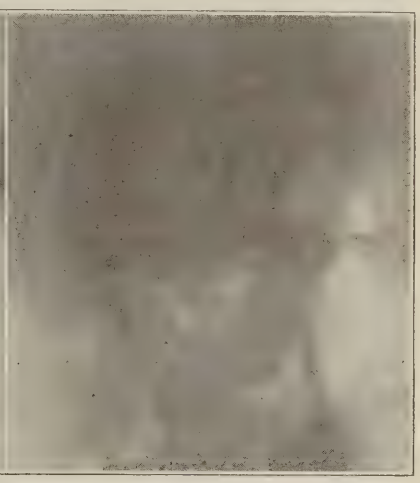

FIG. 3.—Duodenogram obtained in a patient of hypersthenic habitus.

*From the Radiography Department, Bellevue Hospital, Dr. I. Seth Hirsch, director.

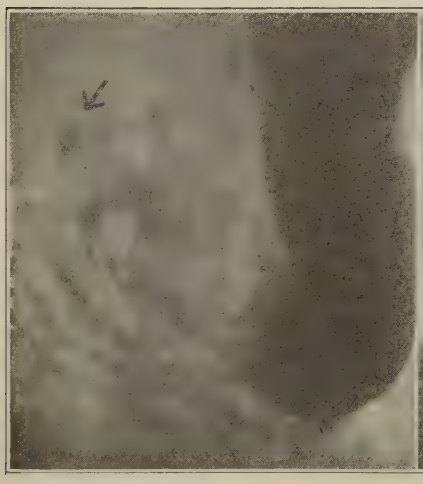

FIG. 4.—Arrow points to saccular dilatation as noted following the ordinary ingested barium meal. By this method the duodenojejunal junction is frequently obscured by overlapping of the barium filled stomach.

FIG. 5.—Same case as Fig. 4. A specially constructed intestinal tube is here shown in situ. The metal connecting piece had not yet been devised. This joins a small perforated piece of tubing to the larger piece.

FIG. 6.—Same case as Fig. 4. Arrow points to saccular dilatation as noted by means of the duodenogram. Note how much more clearly its anatomical relations are defined as compared to Fig. 4.

Fig. 7.—Arrow points to a duodenojejunal diverticulum as noted following the ordinary injested barium meal. There is an associated duodenal deformity.

The duodenogram is a clear radiographic means of differentiation between a duodenal diverticulum and a perforated gastric ulcer.

Fig. 8.—Arrow points to a duodenojejunal diverticulum (same case as Fig. 7) as noted by means of the duodenogram. Note how clearly its exact anatomical relations are defined. Also, how exactly it is shown to be a diverticulum, and not a possible perforating ulcer of the stomach. (Note the associated duodenal deformity.)

Fig. 9.—Duodenogram obtained in a patient showing puddling at the junction of the second and third portions of the duodenum, with reverse peristalsis. The arrow points to a marked diminution in the lumen of the midportion of the transverse duodenum, as the probable cause. This condition is apparently due to spasm in that region.

of the perforations coincides with the beginning of the duodenum. If the tube has not passed sufficiently far, or has passed too far into the duodenum, proper adjustment may be made under fluoroscopic control until the metal connection is properly placed. In this manner the perforated distal portion is made to correspond to the entire course of the duodenal curve, including the duodenojejunal junction. About sixty c. c. of a suspension of barium to which a small amount of acacia has been added is then injected through the proximal end. This mixture on escaping through the distal perforations fills the entire duodenal curve in a complete and homogenous manner. Radiographic films are taken immediately and preferably in the standing position to avoid spine pressure.

I have been able to demonstrate the following applications of the method. I have obtained duodenograms in patients of varying habitus. While there are variations in the position of the duodenal curve associated with the normal variations in the position of the stomach, the size of the duodenal curve bears no constant relation to the habitus. (Fig. 1, 2, 3.)

This is of practical clinical significance in that marked enlargements of the duodenal curve may, regardless of the habitus of the patient, be suggestive of enlargements of the head of the pancreas. The value of the procedure in this connection has been referred to in a former communication (1). The duodenogram is of value in the clear demonstration of sacculations springing from any portion of the duodenum. (Fig. 4, 5, 6, 7, 8.) I wish to emphasize particularly the usefulness of the method in the case of duodenojejunal diverticula. By the ordinary ingested meal method the duodenojejunal junction is frequently entirely obscured by overlapping of the barium filled stomach. The duodenogram brings the duodenojejunal junction into clear relief, and demonstrates the diverticulum as it springs directly from this region. It is especially significant, as a clear radiographic means of differentiation, in a doubtful case between a diverticulum and a possible perforated ulcer of the stomach. (Compare Figs. 7 and 8 from that point of view.)

For an unobstructed view of the entire transverse duodenum the duodenogram is of value. A not infrequent finding in studying duodenal motility is that of puddling of barium at the junction of the second and third portions of the duodenum, with reverse peristalsis extending from this region back towards the pylorus. In its extreme manifestation it gives rise to a writhing motion. Figure 9 represents the duodenogram obtained in a patient in whom the duodenum behaved in this manner.

In the midportion of the transverse duodenum beyond the area of puddling the arrows indicate a zone of marked constriction. An exploratory laparotomy in this patient disclosed the presence of gallbladder disease, but no evidence of organic interference with the transverse duodenum. In my opinion the constriction indicated in the duodenogram is functional in nature, due to spasm, and is the cause of the puddling and reverse peristalsis in the proximal portion of the duodenum.

SUMMARY

1. A simple method is described for obtaining an unobstructed view of a homogenously filled entire duodenal curve. This I have called a duodenogram.

2. There is no variation in the size of the duodenal curve, as compared to variations in body habitus.

3. Enlargements of the duodenal curve suggest the presence of tumors of the head of the pancreas.

4. The duodenogram is of value in the clear demonstration of duodenal diverticula.

5. The method may be employed in exact differentiation between a duodenojejunal diverticulum and a suspected perforated ulcer of the stomach.

6. In studying the phenomena of duodenal motility light may be thrown upon the subject by means of the duodenogram.

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A NEW RAPID PANCHROMATIC BLOOD STAIN*

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The authors have recently submitted an article for publication to the *Journal of Laboratory and Clinical Medicine* in which they describe a new rapid blood stain. The preparation of the stain and procedure follow.

Mix equal parts (sixty mgm each) of methylene blue, thiazin red (methylene azur), and eosin with twenty-five c.c. distilled water and add fifty c.c. acetone. To stain the smear, cover it with a few drops of the staining solution, pour off the excess stain, and allow the adhering solution to remain at least thirty seconds. Wash with tap water.

Recent work has shown us that a simple modification of this stain is possible, wherein the picture obtained may be considerably improved for purposes of cell study. Moreover, large variation in staining effect is possible by altering the procedure. To obtain this new stain, add sixty mgm azur II eosin to that described above.

This solution may be used as a rapid stain, as before modification, or allowed to stand from five to twenty minutes without pouring the stain from the smear. The variation in effect is largely due to the rate of evaporation of the acetone.

The result obtained with the modified stain is practically the same as with a combined May-Grünwald-Giemsa stain. The granules of the neutrophiles, eosinophiles, and basophiles are more distinctly stained than with any other method. This is especially noticed in smears from leukemia blood where premature granules are excellently brought out. In addition to the more obvious advantages of this method it may also be noted that danger from overstaining has been removed.

HOW THE DUODENAL TUBE MAY BE PASSED IN HIGHSTRUNG PATIENTS WITHOUT CAUSING EXCITEMENT

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During the past few years there has been considerable discussion with regard to the use of the duodenal tube in gastrointestinal surgery. Direct alimentation has thus become possible and the patient is no longer starved for several days postoperatively, as is often the case when the tube is not used. Usually, the tube is passed before the anesthetic is begun.

However, the fear of an operation is quite as much as a patient ought to be expected to stand without the fuss and excitement attendant upon taking a duodenal tube, especially for the first time.

Thus it may frequently seem desirable to pass the duodenal tube after the patient is under the anesthetic. But as the tube is made of soft rubber, it is not possible to pass it down the esophagus like the stiffer stomach tube without cooperation on the part of the patient. If, however, the duodenal tube could be made temporarily stiff like a stomach tube there would be no difficulty in passing it after the patient is narcotized, thus securing postoperative alimentation without what sometimes amounts to torture.

I have thus stiffened a duodenal tube and successfully passed it on a comatose patient.

A fine piano wire a little longer than the duodenal tube was bent at one end to form a small eye—the eye being large enough to prevent the wire from slipping through the holes in the bucket and yet small enough to be withdrawn through the lumen of the tube. The tube threaded with the wire and thus stiffened was then passed through the mouth of the patient and into the stomach. With a little manipulation of the wire it was withdrawn and the tube left *in situ*.

In operative cases it is suggested that the bucket be manually put into the duodenum by the surgeon while the abdomen is open.

181 NORTH AVENUE.

*From the pathological laboratory, Agnew State Hospital, Agnew, California.

A Modified Clavicular Cross.—B. B. Landry (*Surgery, Gynecology and Obstetrics,* April, 1925) recommends a convenient modification made in the form of an adjustable cross which is applicable to the treatment of clavicular fractures by the socalled crucifixion method. It can be readily adjusted to patients of all sizes. It consists of five pieces of seasoned maple, the cross piece and spinal piece being joined at right angles by five small screws. For convenience in transportation these may be removed and the parts placed in opposition. In the longitudinal axis of each arm of the cross there is a slotted portion which allows this piece to be moved along a screw bar. This piece is held in the position desired by tightening the screw which is fixed to the cross piece. The screw for adjusting the spinal piece is fastened to the movable part. By means of this screw the splint can be adjusted to the shoulders and the sacral promontory. A small square block is held at the end of each movable portion by two screws which also hold the webbing firmly. The padding and the rubber tubing which is placed over the webbing to prevent chafing differ in no way from those of the unadjustable clavicular cross.

Bifurcation in Irreducible Dislocations of the Hip.—R. S. Reich (*Journal of Bone and Joint Surgery,* July, 1925) holds that the bifurcation operation is indicated in all types of irreducible dislocations of hip joint, in patients upon whom bloodless reduction has been unsuccessful, or who have passed the favorable age limit. Any procedure designed to reconstruct the hip joint should have for its primary object the restoration of the anteroposterior equilibrium of the body in order to overcome the lordosis. The operation has been successfully employed in cases of ununited fracture of the neck of the femur. Although the successful replacement of the head into the acetabulum is the ideal procedure, nevertheless, the bifurcation operation achieves equally good results by a procedure which is extraarticular, is attended with practically no shock, requires a very short time for its performance, overcomes the lordosis, and produces a movable hip joint. There may be a slight amount of increased shortening, which is negligible and easily overcome.

Editorial Articles

REGULATING THE WEATHER

Each of us can be his own weatherman indoors, that is, if he is in a position to have his own way. In his own office and in his own living room he can keep the mercury from dropping to the bottom or, what is more likely in most offices, from climbing to the top of the thermometer. He can also regulate, so far as is needful, the amount of moisture and the degree of air motion to his needs.

As a matter of public health, as well as of public and private wealth, we need somehow to bring about a similar regulation of the weather in public places—in schools, theatres, churches, and in stores. In schools we are making considerable progress in this direction and the child is not nearly so often stifled in his own suppressed heat as formerly. Not infrequently, however, one finds a temperature of 80°, or even higher, in supposedly well regulated school systems. Theatres are much better weathered than formerly, but in stores and office buildings a tropical climate prevails to an almost universal extent and the menace to public health, especially in large stores, is very great indeed, while the extravagance in the consumption of coal is unpardonable.

People who shop (and this means well nigh the whole population) enter the store, in winter, clad for out of door weather. They encounter the heat of the Sahara at noontide, and on leaving the place are in prime condition to be chilled and to come down with colds, pneumonia, and the like diseases for which they are thus prepared. We have no statistics, but it is safe to say that half the colds—perhaps a larger per cent.—are contracted after passing from a room that is too hot (whether at home or in public place) to the out of doors.

Our departments of public health are very particular to inspect restaurants, barber shops, and the like, in search of parasites and their carriers, which, in a very few instances, cause some skin diseases, or possibly typhoid. No attention is paid by these departments to control, either by regulation and inspection or by attempts to educate the public, the temperature at which, for safety, stores and other public places might be kept. And yet some forty per cent. of the illnesses which occur are from respiratory affections, and, moreover, pneumonia stands very high in frequency among the causes of death.

The saving in fuel which would result from such a regulation of the weather as might be brought about would more than pay for the work of visitation of these public incubators, and for a publication, from time to time, of a list of those stores where it is safest to shop, and there is every reason why the management of a store should wish to comply with such a regulation or request. Just what the best temperature for shopping should be, we do not know, but certainly seventy degrees should be a maximum, and doubtless five or even ten degrees colder might be better. The responsibility for the temperature might well be made to devolve upon the shoulders of the floorwalker.

CHANGED AND CHANGING PRACTICE OF MEDICINE

The practice of medicine is changing in character everywhere, but more so and more rapidly in this country than in any other. Dr. Thierry de Martel, a professor of surgery in the University of Paris and a visitor to the Clinical Congress of Surgeons of North America, held recently in Philadelphia, said that the group method of examining, diagnosing and treating patients so greatly in vogue here was the main point of difference between medical practice in this country and in France.

Dr. Rudolph Matas, the distinguished surgeon of New Orleans, and president of the College of Surgeons of America, made the change in the practice of medicine the chief theme of his eloquent presidential address, while Lord Dawson of Penn, who gave the fellowship address on the same evening, took up the same subject. Dr. Matas pointed out that specialists now rule medicine and he thought that the public were convinced that the hospital supplied the most adequate treatment of human ills.

He, moreover, believed that not only would the hospital in the future treat and care for almost all human sickness, but that surgery would assume the predominant rôle in treatment. He thought that the "family doctor" would be transformed into a new kind of creature, or rather that his part in the scheme of medical affairs would be wholly altered. In place of being the family attendant upon whose shoulders fall the medical care of the household, his work would be somewhat of the nature of the public health official of today and an intermediary between the patient and the specialist.

Dr. Matas emphasized the fact that it must be borne in mind that we were living in a transition period in the history of medical organization which had no parallel in past epochs. The system of organization under which the medical profession of this country had lived in fair comfort up to the last quarter of the century was rapidly disintegrating

and yielding to the pressure of unforeseen conditions which were creating new methods of medical service. The old general practitioner who, up to the present, had represented the unit of service in this country, was no longer able to carry singlehanded the great load of responsibility that was being heaped upon him by the new and rapidly accumulating discoveries of modern medical science and its collateral branches. No one brain could carry all the knowledge that was required to discharge adequately the duties of a general medical practice that amply sufficed thirty years ago. Nowadays the work once performed by one man required three, five or more to do it well.

Meanwhile, the general public, at least the majority who have become aware that the best and most economical medical and surgical services are procurable in the hospitals, are drifting from the family practitioner to hospitals, specialists, or the group clinics, but to the hospitals especially. Dr. Matas has a vision of a new type of doctor who will find his chief occupation as a sanitary adviser and public health official.

Lord Dawson urged a hospital for every community, no matter how rural, but the family doctor should remain the foundation of medical service, although his outlook, functions and training required modification to meet changing needs.

A little book has been published recently by G. P. Putnams Sons, Ltd., written by that great authority on public health matters in England, Sir Arthur Newsholme, in which the changing character of medical practice in that country is discussed. The attempt is made in the book to demonstrate that the general welfare of the community is more dependent on the prompt and efficient treatment of disease, on its prevention, and on the enhancement of the general standard of public health and personal hygiene than on any other condition.

In the changing character of medical practice the old type of general practitioner will pass and probably he will find his scope of usefulness, chiefly in the field of preventive medicine. But it will not be altogether in public health. In civilized countries sanitary measures properly enforced have abolished great epidemics, or robbed them of most of their menace. The battle now is against the chronic diseases, which arise largely through neglect of adequate care in childhood and which lead to the most mortal and disabling diseases. The trend of preventive medicine is towards infant welfare and personal and domestic hygiene generally. It may be predicted that the province of the medical man of the future will be to a large extent that of an educator, a teacher of healthy ways in which to rear children, and of personal and domestic hygiene.

LIGHT

Medical people and hygienists must always have some curative or preventive which they laud without sense or reason. Of late it was vitamines which were given undue recognizance, and at present light is in the limelight. Always it is some condition the importance of which was known to our lower (?) animal friends for ages, and neglected by man only, which is now hailed as a lost and only factor for health.

Everybody appreciates sunlight, and we are all sun worshipers, at least on dark days. That it has specific effects on metabolism may be a new item of exact knowledge, but it is unnecessary to anyone who lives a natural life and with a dietary such as any but experimental animals are supposed to have.

While it is well to have ample exposure to light, there is more danger in overexposure than in underexposure, and we are likely to have a fine crop of sunburn, if no worse results obtain from our present light science. It has long been a fad of fashion rather than of hygiene to become tanned in summer, and incidentally this has been pronounced by lay teachers as invaluable to health. As a matter of fact, tanning is only a means of protection of the body against sunburn, which is far from helpful, and, save as a protector, has no relation to health. The Eskimo child has the finest teeth in the world, despite six months of sunlessness. The negro is no healthier than the Caucasian nor the Italian than the Norwegian, the Hottentot than the Pittsburgher or Londoner.

So far as the practice of medicine is concerned, we may expect the lighting machine to supplant the high frequency machine, though it is less spectacular. History would only be repeating herself with new contrivances. A half century ago it was light coming through blue glass that did the business, and in many a house will be found a window supplied with panes transmitting only this color. Before this window sat one or more rheumatic members of the family and took the cure, though they were not always cured.

Light is essential for plants, but it is not proved that it is essential for properly fed animals. At any rate, many animals thrive from infancy in the dark, and the miner, who spends most of his day below ground, is not unhealthy. Even if it is a necessary factor in human growth, we have no business doing harm by letting it overshadow in importance the essentials, for, as Mark Twain said of the premature report of his demise, some of the popular preaching about the results of exposure to light are likely to be "grossly exaggerated" and to do as much harm as good. Let there be light, but not too much of it.

The last sentence has always been the hygiene followed by the animals. Artificial lighting of monkey cages in the London Zoo has recently been tried and, of course, the denizens seek the light and bask in it, but, if it were the direct light from a tropical sun, they would be the first to seek shelter in the cool and shady depths of the forest.

HOUSING AND HEALTH

So far as the prevention of disease and conditions of ill health is concerned nothing is of so great importance as the effects of environment, and of good housing in particular. In the prevention of tuberculosis well ventilated, clean houses and the presence of sunshine are essential. Rickets is another condition which can only be prevented, or successfully treated, by sunshine, fresh air and exercise.

However, in the case of rickets the pendulum has now swung too far in the direction of these preventive and curative measures. It is stoutly affirmed by some authorities that rickets is a disease due solely to the absence of fresh air and sunlight and to the lack of exercise in the open. Not long ago it was asserted with equal insistence that it was a diabetic disease and was labeled by many a dietetic deficiency disease. While the researches of Paton, Finlay, of Glasgow, Hess and other American investigators have shown that sunlight, good air, exercise and healthy surroundings have much to do with the absence of rickets, it yet seems a palpable exaggeration to state that these are the sole causes and that diet is a negligible factor.

Diet plays a part in its causation. But it is absolutely true that the conditions prevailing in the poor districts of large cities, and especially in industrial cities, provide hotbeds for the development of rickets, tuberculosis and many other diseases. In fact, the provision of an adequate supply of good houses with plenty of open spaces is necessary for the prevention of disease, and it is obvious that until slum areas are cleared away disease will continue on a wide scale.

Rickets is largely responsible for defects, such as the altered shape of the chest, defective growth of the teeth, in the formation of the palate which is high and arched, in the thickening which occurs over the forehead and over the back of the skull, and in such deformities as flat foot, lateral curvature, and knock knee.

To the conditions of life in the slums, including, be it said, inadequate and improper food, a heavy toll in deaths from infectious diseases is owing. Of these, measles, whooping cough and bronchitis are among the most prominent. Perhaps the majority of the severe cases of difficult labor is due to the fact that the mother has at an early date suffered from rickets. The orthopedic departments of our hospitals are largely supplied by deformities arising from rickets and tuberculosis.

Unhealthy housing and environment cause much ill health and are responsible to a large extent for the product of the poorer parts of the big towns of today, the ineffective type of adult, deficient alike in physical stamina and in nervous energy and stability. It is not only better houses that are needed, but the supply of healthy environment to the young child, so that it may have its fair share of sunshine and fresh air and the opportunity for exercise in the open. Good housing and healthy surroundings with a sufficiency of unsophisticated food would create a revolution in the type of the human product of cities and would be the longest step ever made in the direction of the prevention of disease.

CONGRESS FOR DIGESTIVE DISEASES AND METABOLISM

A meeting of the Association for the Diseases of Digestion and Metabolism was held in Vienna from September 30th to October 3rd, inclusive, under the chairmanship of Professor L. Kuttner, of Berlin. Over six hundred members from all parts of the world were present. The German and Austrian physicians and surgeons formed the bulk of the association. There were present, besides, a number of well known physicians from Holland, Sweden, Norway, Denmark, Finland, Russia, Poland, Latvia, Hungary, Czechoslovakia, Italy, Spain, the United States, Canada, and Brazil. Excellent papers on metabolism and digestive diseases were read and discussed. A few of these appear in this issue of the JOURNAL in a symposium on gastroenterology.

The executive committee of this association decided to elect permanent members and to hold meetings yearly either at Berlin or Vienna, alternately.

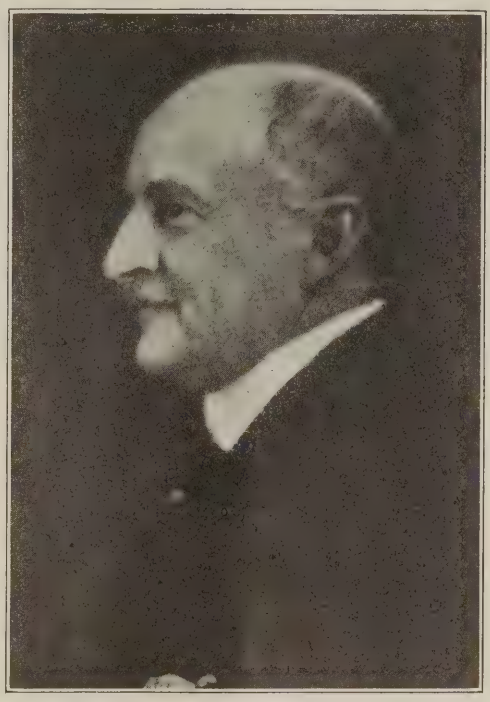
Vienna proved to be very hospitable. There was a special performance of *Der Rosenkavalier* given in the Opera House for members of the congress. An excellent banquet was given by the Vienna physicians at the Imperial Hotel for a selected group of noted members of the congress and readers of papers. There were also numerous social entertainments for the visiting ladies. An excursion was arranged to the Semmering, where the guests could spent a few days in this well known mountain resort. Altogether the congress was a great success scientifically as well as socially, and everybody who had the good fortune to be there felt the desire to come again. The next congress will take place in 1926 in Berlin, under the presidency of von Bergmann of Frankfurt.

Obituary.

NATHAN EDWIN BRILL, M.D.

B. SACHS, M.D.
New York

In the death of Dr. Nathan E. Brill, the medical profession and the community have suffered a real and serious loss. To a rare degree he combined the finer qualities of a learned physician with those of a man of culture and refinement. In his professional relations to his colleagues and to his patients he was the man of splendid acquirements, skilful in practice, upright and even aggressive in defense of his views, eager to advance medical science, justly proud of what he had achieved. He realized his obligations to the community in which he was born and bred, giving the best that was in him to every forward civic movement, and proving by his diverse activities that the medical man has unusual opportunities, if he will only avail himself of them, to be of great service to his fellow man.



NATHAN EDWIN BRILL, M.D.

Dr. Brill was born in this city January 13, 1860; he was trained in the public schools and was graduated from the College of the City of New York, taking his degree of A.B. in 1877, and of A.M. in 1883. He studied medicine at the New York University Medical College; he received his medical degree in 1880. From 1879 to 1881 he was an intern at Bellevue Hospital. While devoting himself chiefly to the study and practice of general medicine, he took especial interest in neurology and in the early eighties, stimulated by close association with Edward A. Spitzka, did good work in the comparative anatomy of the nervous system, contributing to medical literature a very valuable monograph on congenital defects of the nervous system. Brill maintained his interest in neurological science throughout his life and was a familiar and welcome figure at many neurological meetings.

In 1893 Brill was appointed attending physician to Mount Sinai Hospital. During a period of over thirty years he was active and energetic as investigator and clinical teacher. Although fully alive to the progress of medical science, and aware of the importance of the biological and chemical laboratories in the study of disease, he developed keen clinical insight and belonged to that small and ever diminishing group of clinicians who believe that the diagnosis can and should be made at the bedside, and that observation of the patient is as important as are many of the laboratory tests.

His description in 1910 of the endemic form of typhus fever (now known as Brill's disease) revealed his skill as a careful medical observer. He maintained his interest in all forms of acute infectious diseases. Leucemia and all forms of blood disease exercised a special fascination over him. He was a true master in this domain. His articles on the Gaucher type of splenomegaly, his discussion of the diseases of the blood forming organs, his study of the value of splenectomy in thrombocytopenic (essential) purpura, showed his unusual grasp of an important series of newly recognized forms of disease.

Much more might be said to record his ability as consulting physician, to recall his excellence as guide to the aspiring medical youth. His services as clinical professor of medicine at the College of Physicians and Surgeons, his active participation in the work of the public health committee of the New York Academy of Medicine, his functions as vice-president and president of the Medical Board of Mount Sinai Hospital, his interest as a member in the affairs of many national and local societies, such as the American Medical Association, the Association of American Physicians, the New York Academy of Medicine, the American Neurological Association, and the Society of Medical Jurisprudence of which he was president from 1892 to 1894—all go to show that his talents were recognized and appreciated. Whatever Brill undertook to do he did well. His heart and soul were always in the task before him.

To his great chagrin, ill health prevented his going overseas; but he did his patriotic best in directing the work of Base Hospital No. 3. He was proud of his rank as major in the United States Army Medical Corps. At all times he was intensely American in his feeling and his judgment. In 1917 the first signs of the fatal illness appeared. Hampered as he was by loss of voice, he "carried on" for several years, displaying an indomitable will and enviable courage. His friend, the Rev. Stephen S. Wise, in paying tribute to his many good qualities, emphasized Brill's stoicism—"the courage of an uncomplaining gentleman, who in the face of adversity and trial and infinitely burdensome difficulties, faces life with that courage without bitterness which the world associates with stoicism." Those who visited him during his cruel illness will bear witness to his astounding patience when life had become a distressing struggle. His friends will think lovingly of Brill, the invalid; but they and all medical men will do better to pay homage to the man as he was in his prime and throughout his long and active career. Kindly, cheerful, forceful, a man of high ideals, a fine physician, and, above all, a fearless defender of truth.

New York's New Medical Centre

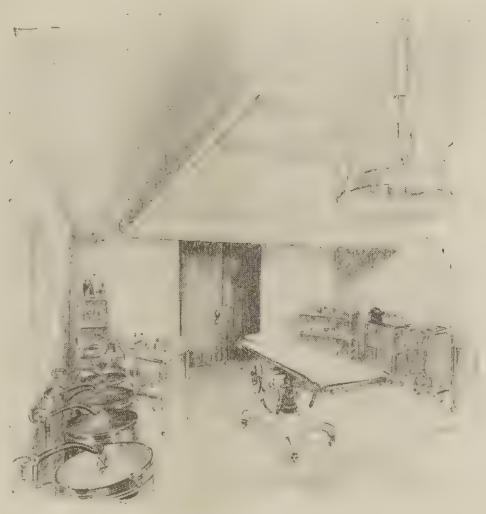
MABEL WEBSTER BROWN, B.S.
New York

"Specialization is the parent of information and of a certain type of skill," said Dr. Nicholas Murray Butler, president of Columbia University, in a recent address, "but it is the foe of knowledge and the mortal enemy of wisdom. Not narrow men, however keen, but broad men sharpened to a point, are the ideal product of a sound system of school and college education." The realization of this fact is back of the revolt of the twentieth century against the overspecialized nineteenth. Since the time of Pasteur men of exceptional ability in the science of medicine have attracted schools of followers, in their turn attended by multitudes of the afflicted. These groups, becoming usually isolated units, played their inevitable and immensely significant part in the growth of medical science by developing and perfecting scientific knowledge along their own particular and individual lines of interest. Then the necessity for coordination became evident, and the best ways to attain it one of the outstanding problems of medical science.

The solution of this problem is the underlying ideal of New York's new Medical Centre, which is being constructed on upper Broadway between 165th and 168th Streets. Its keystone will be a building erected and shared by the Presbyterian Hospital and the College of Physicians and Surgeons of Columbia University. Other institutions, which have agreed to become identified with the Medical Centre, are the New York State Psychiatric Institute and Hospital, now located on Ward's Island, the Neurological Institute, the Babies' Hospital, the Sloane Hospital for Women, the Vanderbilt Clinic, and the Presbyterian Hospital School of Nursing. This list of institutions in itself indicates that the scope of the Medical Centre's work will be threefold—medical care and treatment, the teaching of medical science, and the provision of the best opportunities for scientific research work. There the specialist, who was becoming more and more isolated from specialists in other lines, may find his great contemporaries near at hand; the patient, who has perhaps toured the country for medical advice, will have an opportunity to receive a combined opinion, and to place himself in the hands of a single man if he wishes; the student, the nurse, the research worker, the public health worker, the dentist, the social worker—all may have a single source of knowledge, where theory and practice may be combined. To quote from a recent article of Dr. C. C. Burlingame, executive officer of the joint administrative board of the Medical Centre: "So the public and the patient are demanding an opportunity of once more going to one place where 'all that can be done will be done.' This is the elaboration of the medical centre idea. It is the one place where science can focus upon disease, where knowledge can be imparted to any of the army of health workers, and where the

patient with his disease can find complete care." The success of the medical centre idea has been incontestably demonstrated by such institutions as the Mayo Clinic, Johns Hopkins University and Medical School, the Harvard Medical Centre, and others in St. Louis, Cincinnati, and some of the State universities. In Chicago a similar step has been taken in regard to the Rush Medical School and certain hospitals. Montreal, Berlin and Vienna are among foreign cities where the experiment has been successfully tried out.

The New York Medical Centre had its inception in 1911, when an agreement was effected between Columbia University and the Presbyterian Hospital whereby the latter became a "teaching hospital" for the University's medical school, the College of Physicians and Surgeons. Although these two institutions have been closely allied in this working agreement, they are quite widely separated in distance, and the daily inconvenience and loss of time from such a separation stimulated Dr. Samuel Lambert, at that time Dean of the College of Physicians and Surgeons, to work out a proposed scheme for a medical centre. This was in 1915. After a study of all available sites, an option was obtained on the old American League Baseball Park, and this land was donoted by its owners, Mrs. Stephen V. Harkness and Edward S. Harkness, to the Medical Centre. By 1917 definite plans were being discussed, but the World War prevented the taking of any steps. In 1921 a Joint Administrative Board was formed, and Dr. Burlingame, psychiatrist, who had served as Director of the Medical and Surgical Department of the American Red Cross in France and later as an organizer of industrial medicine, was appointed executive officer. Other members of this joint administrative board are: General William Barclay Parsons, chairman, Mr. Henry W. de Forest, vice-chairman, Mr. Edward S. Harkness, Mr. Dean Sage, Dr. Walter B. James, Mr. John G. Milburn, Mr. John Sherman Hoyt, Mr. Robert Thorne, Mr. Newcomb Carlton, Mr. Jackson E. Reynolds, Mr. W. E. S. Griswold, and Dean William Darrach, ex-officio. The plans for the Medical Centre now under way are based upon a three years' study of hospitals in this country and abroad made by the joint administrative board.



An Operating Room in the New Presbyterian Hospital

The location of the Medical Centre is ideal for its purpose. The twenty acres comprising the site extend from Broadway on the East to Riverside Park on the West. The land at Broadway is high and slopes toward the Hudson. The view of the river and Palisades is magnificent, and there are unlimited fresh air and sunshine. The Interborough Subway and the new subway will have a combined express station at the Centre. The Fifth Avenue buses and several trolley lines pass the grounds. Moreover, the Centre is in the heart of a district with inadequate hospital facilities. In this whole upper portion of Manhattan there are only 789 general hospital beds.

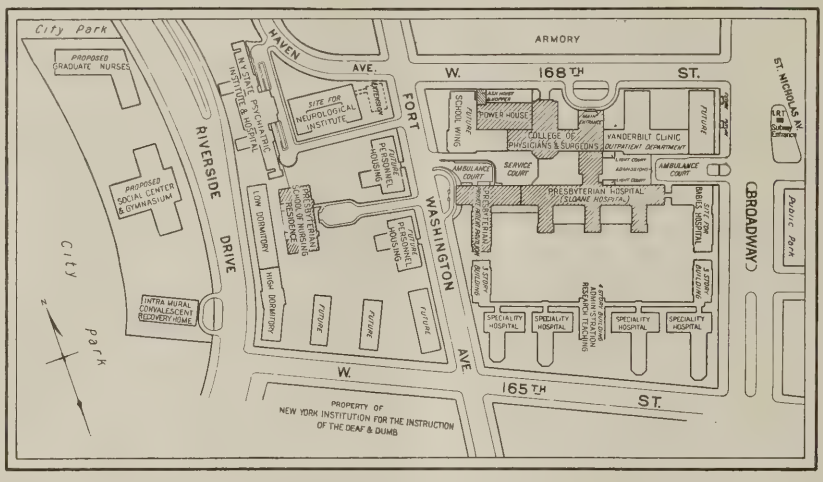
The Centre will represent an investment of approximately $20,000,000. The nucleus of the group of buildings will be a twenty-two story structure which will house the Presbyterian Hospital, the College of Physicians and Surgeons, and the Sloane Hospital for women. Ground was broken for this building on January 31, 1925, and it will be ready for occupancy in the summer of 1927. Connected with this will be a private patient pavilion with 125 rooms. Rapid progress has already been made in building this, for the steel framework is erected and the brick walls are being laid. That part of the central structure which will contain the Presbyterian and Sloane Hospitals will be a series of small hospitals, each floor being practically complete in itself. A ward floor will have sixty-four beds, divided into rooms containing from one to twelve beds, and sun parlors, dressing rooms, treatment rooms where minor operations may be performed, laboratories and kitchens. On the fifteenth floor will be the operating service with eight operating rooms and an amphitheatre seating 135. This will be used also for a meeting place for medical congresses when in session in New York. Six of the operating rooms will have screened mezzanines from which students and visitors may observe operations. Above the operating floor will be a gymnasium and recreation roof with a music room, and two glass enclosed loggias. At each end of the roof will be open courts with tile floors for shuffle board, quoits and other games. The gymnasium will be open to the staff and to patients who need corrective exercises.

The New York State Psychiatric Institute and Hospital will be a twenty story structure with a Riverside Drive entrance on the first floor and an entrance from Haven Avenue on the eleventh floor. This is possible because of a cliff on the property. The building will accommodate two hundred patients between the first and eleventh floors. One floor will be given over to children suffering from mental and nervous disorders, and will be equipped with a school room and play rooms. The ten upper floors will be devoted to laboratories, a museum, a library, class rooms and other facilities for the scientific study and investigation of mental and nervous diseases. The cost of the Institute will be $1,600,000. It was authorized by a special act of the Legislature in 1920. The New York State Hospital Commission selected the Medical Centre site as the one most suitable for carrying out the terms of the Act. Only cases of special interest will be kept at the Institute; others will be sent to one of the fourteen State hospitals in New York State.

The Neurological Institute will erect a modern hospital at the Medical Centre on Haven Avenue next to

the Psychiatric Institute. The site chosen for the Babies' Hospital is on Broadway. Sloane Hospital will have two ward floors in the central building and a floor in the Presbyterian Hospital's private patient pavilion, for observation, with an additional ward and private patient accommodations for gynecological work. The Vanderbilt Clinic will be located in the Presbyterian Hospital's outpatient department.

Work is well under way for the School of Nursing residence, which will overlook Riverside Drive. This building will cost $1,000,000, the money having been raised by nurses and their friends. Only student nurses will be accommodated here, since there will be other provisions for graduate nurses. A tunnel under Fort Washington Avenue will connect the residence with the main group of buildings.



Ground Plan of Medical Centre

Arrangements have recently been completed for the transfer of the J. Kennedy Tod Estate at Sound Beach, Conn., to the Presbyterian Hospital as the site for a convalescent home for Medical Centre patients. The estate consists of a peninsula containing 117 acres and two small islands. It is located on the Sound about thirty-five miles by paved road from the Centre, and is also accessible by water. The grounds include rolling country, fields and meadows, woods, lakes and ocean beach.

The Columbia University College of Dental and Oral Surgery will become identified with the Medical Centre as soon as funds become available for a new building. The Crocker Institute of Cancer Research, and the College of Pharmacy of the City of New York, are expected to join the group eventually. Provision has been made for additional specialty hospitals and schools devoted to the promotion of health and medical science.

The curriculum for students at the Medical Centre will include instruction in all the branches of medical science, dentistry, nursing, oral hygiene, social hygiene, social science, and hospital administration. In care and treatment of the sick, emphasis will always be placed upon a coordination of all forces on the *patient;* he will be the focus of attention—not primarily as an interesting "case," but as an individual man, woman, or child, in need of succor. With conditions such as will prevail at the Medical Centre, it will be the practical thing, in most cases, for the specialist to be brought if necessary directly to the patient. The ideal of the coordinating institutions will be always the patient as focus of medical knowledge, in opposition to the conception of him as a theatre for the activities of medical investigation. The care of the sick will include general medical and surgical treatment, eye, ear, nose and throat diseases, pediatrics, obstetrics and gynecology, venereal diseases, psychiatry and neurology. Research facilities will comprise laboratories for study and investigation in all kinds of diseases, mental and physical; and social service and hospital administration equipment.

Since all the institutions which are to cooperate in forming the Medical Centre have made large and valuable contributions to medical science and care in New York City, a sketch of their origin and development will be of interest.

Presbyterian Hospital was opened for occupancy on October 10, 1872. The illness of an old colored servant in one of New York's prominent families was, indirectly, the cause of its founding. Dr. Oliver White, a leading physician of that day, found this old woman sadly in need of good hospital care. When he tried, however, to place her in an institution of the proper kind, he found that she was barred because of her color. Indignant at such a state of affairs, Dr. White told his friend, James Lenox, that New York should have a hospital that would receive for care every person in need of its services. Mr. Lenox was heartily in sympathy with these principles, so, when the institution opened its doors, the wall bore conspicuously a bronze tablet declaring Presbyterian Hospital to be "for the poor of New York, without regard to race, creed, or color." This remains today the guiding principle of the institution. A further demonstration of loyalty to this ideal was given in 1895, when the great iron gates that guarded the hospital were removed as being out of keeping with the principle of its being open without restriction to all. The annual report for 1923, more than half a century after the founding of the institution, shows that the original ideal is still being followed, in that of the 255 beds, only thirty-five were allotted to private patients; 67 per cent. of ward treatments were given entirely without charge. The number of Roman Catholic and of Jewish patients exceeded that of any single Protestant denomination.

When Presbyterian was founded, it stood near what was then the upper end of Madison Avenue, directly adjacent to "Shanty Town," now a part of Central Park. The fashionable residents of Washington Square would drive up in their victorias and landaus to select their own vegetables from the Lenox Farm near by. Shanty Town was a disreputable and lawless district where squatters lived in huts and sheds built of cast off lumber and other

building materials, and made a precarious living as junkmen, hucksters, laborers and sometimes thieves. Their hovels were hideous, dirty, and unsanitary beyond description. The story, now a classic in New York's medical history, is told of a young physician who received a first call to visit a lady on Fifth Avenue. Wishing to make his initial professional appearance as impressive as possible, he dressed in his best, assumed his most dignified manner, and hastened to the bedside of the aristocratic resident of that famous avenue. The address proved to be that of forlorn hovel in which dwelt an old Irish woman suffering from chronic rheumatism. She was living in one room with her junkman son, and a large number of children, dogs, hens, and a goat. This picture is typical of the homes which surrounded Presbyterian at the time of its establishment. So it was indeed well placed for the great work it was to do.

A most important contribution to medical care and treatment made by the hospital was the establishment of one of the first training schools for nurses in the country. Dr. W. Gilman Thompson records the condition of the men's wards before trained nurses were available, when night "orderlies," usually convalescent patients, supervised the wards. The following are typical reports of such orderlies: "All patients slept good most part of night." "Nothing extra to report." "Everything quiet." "Rogers was noisy tonight. Whenever I turned my back he was out of bed." "There is nothing special to report this morning as all patients slept well and Cavalle slept like a young goat." "Cavalle slept well, but he kept shouting and whistling in this state, otherwise he was very quiet as he made no attempt to wander through ward. All other patients slept well." "Schneider died at 4:10 a. m. All others done well." Such reports speak for themselves; so Dr. Thompson recommended the establishment of a school of nursing, and on May 1, 1892, one was opened under the supervision of Anna Caroline Maxwell. This school has graduated nearly 900 nurses, who have played prominent parts in health service, not only from day to day, but in crises, such as the cholera epidemic in 1893; the Chickamauga typhoid epidemic in 1898; the terrible summer in 1901, when more than a thousand died in New York City from the heat; and in the World War, during which Presbyterian had more than 200 nurses in service. This hospital was also one of the first to establish a social service department. This was in 1904. In 1905 the Katie Geitz Diet Kitchen was established at the foot of Seventy-seventh Street to dispense milk to tuberculous patients, and warm, nourishing lunches to school children of the neighborhood. Hill Top Camp at Hawthorne Camp, New York, gave health improvement and recreation in 1923 to 110 "heart and tuberculosis" children.

Presbyterian was also a pioneer in introducing into America modern antiseptic methods. In 1876 a newsboy, who had fallen under an elevated train and been badly injured, was brought to the hospital. Dr. D. Bryson Delavan, then a young staff member, believed that amputation of the crushed leg, which seemed necessary according to the methods of the day, would result in death, so he asked for permission to try the then new Lister method. This was done and the boy recovered. In the same year, the first complete antiseptic treatment administered in America was performed by Dr. L. A. Stimson at Presbyterian Hospital. The case was a long neglected and very serious leg wound, but recovery was rapid and complete. The hospital brought to this country what is believed to have been the first Lister apparatus for operating under a carbolic spray. It was the first hospital in New York to use the insulin treatment for diabetes. In 1924 Dr. Alphonse R. Dochez, of the staff, announced his discovery of a serum that may revolutionize scarlet fever treatment.

Throughout its whole existence, from its foundation to the present day, the main consideration of the Presbyterian Hospital and its School of Nursing has always been the welfare of the individual patient, and it is this guiding ideal that forms the basis of the policy of the new Medical Centre, of which Presbyterian will be a unit.

COLLEGE OF PHYSICIANS AND SURGEONS

Occupying the central structure of the Medical Centre with the Presbyterian Hospital will be the College of Physicians and Surgeons of Columbia University. Its relation to the hospital has already been outlined. In 1807 the need of a well organized and well equipped medical college for New York was felt so strongly that the newly organized and very active Medical Society of the County of New York, which already possessed the power of examining students and granting licenses for practice, applied to the Legislature and to the Regents of the State University for incorporation as a college. A charter, dated March 12, 1807, was promptly granted by the Regents, establishing in the City of New York, the College of Physicians and Surgeons, "for the promotion of medical science and diffusing the knowledge of the healing art."* The first president was Dr. Nicholas Romayne, to whose efforts the establishment of the College was largely due. He was a graduate in medicine of Edinburgh and had studied in Paris and Leyden. The College opened in November, 1807, with an enrollment of fifty-three students, in a house in Robinson Street, now Park Place. The annual course was of four months' duration, supplemented by optional lectures. At least two years of study were expected before graduation. The years 1811-1826 were marked by some internal dissensions, which were adjusted by reorganization by the regents.

In the year 1813 an event of importance occurred in the absorption by the College of the medical faculty of Columbia College, a union which more than doubled the number of instructors and increased the teaching strength and prestige of the institution. The College now moved into quarters on Magazine, now Pearl Street, and soon afterwards to a house on Barclay Street, which building, with additions, served as headquarters for the next twenty-four years. Next it acquired possession of the famous botanical garden of Dr. David Hosack, covering the section now included between Forty

*F. S. Lee: *History of the School of Medicine.*

seventh and Fifty-first Streets on Fifth and Sixth Avenues. It was supposed that this would prove a valuable aid in the study of materia medica, but these hopes were disappointed, and the garden was transferred to Columbia College. In 1837 the College moved to a larger and more suitable building in Crosby Street. At this time optional spring and autumn courses were inaugurated, and, through the instigation of Dr. Willard Parker, clinical instruction in the College building as supplementary to beside instruction in the hospitals was instituted and has since remained. In 1856 the College was again moved, this time to the corner of Fourth Avenue and Twenty-third Street. Soon afterwards, under the presidency of Dr. Edward Delafield, it took an important and long needed step —alliance with Columbia College. This was preceded by a separation, by mutual agreement and legislative action, from the Regents of the State University. Now for the first time the trustees had the powers of granting degrees and of appointing their own officers. The title of College of Physicians and Surgeons was retained, but the institution was thereafter known officially as the Medical Department of Columbia College.

SLOANE MATERNITY HOSPITAL AND VANDERBILT CLINIC

In 1878 the first laboratory was established through the efforts of the Alumni Association. In 1884 William H. Vanderbilt made the splendid donation to the College of the land on Fifty-ninth Street, where it now stands, and $300,000 besides for the erection thereon of new buildings. Soon afterwards Mr. and Mrs. William D. Sloane proposed to build and maintain the Sloane Maternity Hospital, now the Sloane Hospital for Women, which will be housed in the same building of the new Medical Centre as the Presbyterian Hospital, and the College of Physicians and Surgeons. The Sloane Hospital was to be under the immediate direction of the professor of obstetrics, and was to furnish free obstetrical service and opportunity for practical instruction. At the same time the four sons of Mr. Vanderbilt gave $250,000 for a third building, the Vanderbilt Clinic, to serve as a free dispensary and home for the college clinics. The College building was completed and dedicated on September 29, 1887, and the other two buildings on December 29th of the same year. Through further generous gifts of Mr. and Mrs. Sloane, more land was purchased for an anatomical building, laboratories were added to the College building, the Clinic was doubled in size, and the Maternity Hospital enlarged and its capacity more than doubled.

The College year had by this time been lengthened a number of times, another year was added to the two years' course, the faculty was increased and new courses added, and demonstrative, practical and experimental work greatly augmented by new apparatus, instruments, models, museum specimens, and other necessary equipment. The College was thus enabled to take a position of leadership in medical science, and it has ably maintained this position throughout its progress up to the present time.

BABIES' HOSPITAL

The Babies' Hospital, now located at 135 East Fifty-fifth Street, first opened its doors in 1887 in a twenty foot dwelling house at 161 East Thirty-sixth Street. It was the first hospital in America designed exclusively for sick infants, and it had eight beds. The early years were difficult ones, yet the progress toward an ideal was continuous. On June 23, 1887, the Hospital was incorporated, and a house on East Thirty-sixth Street was finally rented, after some complications, and work begun there in June of 1888. This venture, however, proved rather unsuccessful, and the whole project was threatened with dissolution, until Dr. L. Emmett Holt was persuaded to take charge of the medical work, a position in which he served with notable success until his death in 1924. In 1889, the present home of the hospital was acquired, and from that time until today the success and scope of the work has steadily increased. A Training School for Nursery Maids was organized in the wards of the Hospital in 1890, and in 1891 an out patient department was opened. In the same year, Dr. and Mrs. A. Blair Thaw offered to erect a permanent summer home at a cost of $10,000 in memory of their children. Land for this was purchased at Oceanic, New Jersey, and a cottage built; other cottages were donated by Mr. and Mrs. J. Hooker Hamersley, William F. Havemeyer, and Edward Kemp. These buildings, with the Nurses' Home built by the Cribside Committee in 1889, form a complete summer plant accommodating fifty children. In 1894 a house adjoining on Lexington Avenue was rented and connected with the Hospital.

In 1896 Dr. Christian A. Herter established and equipped a pathological laboratory and for several years contributed largely to its support. By 1900 the Hospital buildings were found to be altogether too small and unfitted for the growing work, and, through a campaign and the generosity of John D. Rockefeller, $200,000 was secured for a new building. This was constructed on the same lot, the hospital work having been temporarily transferred to another location, and was ready for occupancy in September of 1902. In 1905 the house adjoining was purchased for a dormitory for nurses, but in 1907 this was demolished and a greatly needed addition to the Hospital built in its place. Since that time the work of the Babies' Hospital has continued to increase so rapidly that these quarters are much too small, so a new building will be constructed near the main group of Medical Centre.

NEUROLOGICAL INSTITUTE

Across Fort Washington Avenue from the main group of buildings will be the Neurological Institute, now on East Sixty-seventh Street. Dr. Edwin G. Zabriskie, secretary of the Institute, has outlined its history in a recent article. During the month of March, 1909, certain ideas that had long been quietly gathering force in the minds of several medical men of New York City, were presented to a small group of public spirited and influential men who had been asked to listen to a statement of the need for a hospital that could adequately care for those suffering from nervous or mental disorders. The purpose of this hospital as set forth embodies three

great principles. First, the principle of providing adequate dispensary and hospital facilities for the diagnosis and treatment of the many types of nervous and mental disorders among what might be called the great class of people in moderate circumstances, who were unable to afford the cost of expensive private sanitariums, yet shrank from entering the wards of general hospitals. . . . Second, the principle of educating the community through broadcasting the fact that assistance can be provided for those suffering from the disabling mental problems and nervous troubles constituting the great class of neuroses by meeting these problems openly. Third, the principle of intensive study of the many baffling problems concerning the nature, the cause, the origin, the treatment and the prevention of the diseases which constitute this special branch of medicine.

After the War, when the Institute settled down to its normal activity after demobilization, the older members of the Medical Board early in 1920 decided to pass the burden of active direction on to the men they had trained to succeed them. Thereupon a new Board was appointed by the trustees consisting of Foster Kennedy, Walter Timme, and Edwin G. Zabriskie, with Charles A. Elsberg still remaining as surgeon. Eventually Frederick Tilney of Columbia, was invited to join the staff, and in this way the Institute was able to bring together representatives of two great teaching institutions in New York City on its Board. Increased activity in scientific research followed, made possible by special grants from the Commonwealth Fund. In the meantime, the intensive study of maladjusted children had been undertaken, and the classification clinic founded as an auxiliary department where adolescents of both sexes might be studied and guided in their future development.

Dr. Zabriskie states that "the history of the Institute is replete with attempts to lead the way in the relief of suffering, in the education of laity and physicians, and in scientific advance. Perhaps the most important decision in its life history has recently been made through affiliation with the Columbia-Presbyterian Medical Centre, where close contact with other branches of medicine and unlimited opportunity for scientific research will be available."

PSYCHIATRIC INSTITUTE

Adjacent to the Neurological Institute will be located the New York Psychiatric Institute and Hospital. In 1895 the State Hospital Commission secured the passage of a law providing for the establishment of The Pathological Institute of the New York State Hospitals. The plan was to develop the Institute as a central pathological laboratory and research department for the New York State Hospital System. Dr. Ira Van Gieson was appointed Director, and quarters for the new Institute were provided in the Metropolitan Life Insurance Building, 1 Madison Avenue, New York.

The Institute was conducted at this location until 1901, when Dr. Van Gieson resigned and the laboratory was closed until 1902, when the Institute was reorganized and moved to Ward's Island where access could be had to the clinical material of the Manhattan State Hospital. Dr. Adolf Meyer was appointed director and the name was changed to the New York Psychiatric Institute. The activities of the Institute were broadened to include work in clinical psychiatry, neuropathology, chamistry, serology and allied subjects. Dr. Meyer resigned in 1910 to accept the professorship of psychiatry at the Johns Hopkins Medical School, and was succeeded by Dr. August Hoch. In 1917, because of ill health, Dr. Hoch resigned and the present director, Dr. George H. Kirby, was appointed.

In 1920 the Legislature passed a bill authorizing the removal of the Institute from Ward's Island to a new location to be selected in New York City. The new plan calls for the development of a modern psychiatric hospital of two hundred beds, combined with an Institute with facilities for research and teaching in the general field of psychiatry. Special emphasis will be placed on the treatment of incipient and early mental disorders as well as the study and investigation of more advanced mental conditions. Special studies and investigations will be carried on in neuropathology, neuroanatomy, bacteriology, biological chemistry, serology, endocrinology, psychology and allied subjects. An important phase of the work will be the study and treatment of problem children both in the school and preschool age. It is planned to make the new hospital and institute an educational as well as a research and treatment centre, a place where information and expert advice may be obtained on all problems relating to mental health, where courses will be given for teachers and social service workers, in addition to providing instruction for medical students and postgraduate work in psychiatry for physicians. It is expected that the new institution will become one of the most active mental hygiene centre in the country.

"So it is," to quote Dr. Burlingame again, "that the medical sciences are developing along the lines of institutional cooperation, not competition; association, not consolidation; coordinated knowledge, but individual service; group service, but personal attention; with all health workers trained together. The days of the family practitioner are returning to New York—not as formerly when all of his information was personal—but as the coordinator of the knowledge possessed by a group of highly trained scientists. And once more the patient will be able to cast all of his health burdens upon a single man."

After a recent visit to the new Centre by Lord Dawson of Penn, physician to His Majesty the King of England, and Sir Arbuthnot Lane, the noted British surgeon, the latter made, in a letter of appreciation to Dr. Darrach, the following comments on the significance of the proposed work: "Please accept my most hearty thanks for giving me the opportunity of seeing the magnificent work that is being done in the construction of the new buildings of the Columbia-Presbyterian Hospital. It was a great joy to me to see how medicine is going to develop in New York and to feel the pride that the whole medical profession will experience when they learn of the monumental work you have done. It will do much to elevate the whole position and standing of our profession among the professions of the world, and to make the public realize what efforts are being made to secure to them health and happiness."

Letters to the Editor.

EDITORS OF THE EXTRA PHARMACOPŒIA

London, *December 7, 1925.*

To the Editor:

We received a few days ago a copy of your issue for November 18th, in which there is a short notice of the *Extra Pharmacopœia* on p. 631. In the last paragraph there is an unfortunate error with regard to the death of one of the editors. The editor who died a short time ago was Dr. W. Wynn Westcott. We communicated with the surviving editor, sending him the notice, and in thanking you for same, he asks that you will be good enough to insert a note correcting the mistake.

As a matter of fact Dr. W. H. Martindale has done the editing for several editions, as for some years Dr. Westcott has not taken much part. The mistake which has occurred suggests the words of a celebrated author of your country that the report concerning Dr. W. H. Martindale's death is "greatly exaggerated."

H. K. Lewis & Co., Ltd.
H. L. Jackson, Director.

News Items.

Virginia Medical School.—The amount of $700,000 has been granted by the General Education Board to the University of Virginia for buildings and equipment of the medical school.

Fellowship Reward.—Dr. William E. Gye has received the annual fellowship award established by London University for the graduate doing the most for the advancement of medicine in the last five years.

Medicinal Use of Alcohol.—The National Woman's Christian Temperance Union has passed a resolution that the sale and prescription of alcoholic beverages as medicine should be unlawful, and that legislatures should be commended which have passed laws forbidding such sale and prescriptions.

Pittsburgh Skin and Cancer Foundation.—A report of the second year of the establishment of this foundation shows the attendance doubled; of 557 new cases, 410 were in the dermatological and 93 in the cancer department. A study is being made of the relation between gastrointestinal and dermatological conditions.

Rockefeller Studies.—At present the Rockefeller Institute for Medical Research is studying cases of nephritis, chickenpox, acute pulmonary infections, rheumatic fever, and cardiac disease. Physicians wishing further information regarding the acceptance of such patients should communicate with the Institute.

Anniversary Celebrated.—A banquet was recently held in Baltimore commemorating the one hundred and eighteenth anniversary of the founding of the School of Medicine of the University of Maryland. The medical school was the fifth to be established in this country. Dr. Arthur Shipley, professor of surgery, was toastmaster.

Hospital News.—The Western Suburban hospital of Oak Park, Illinois, is to erect a $350,000 addition.

St. Bernard's Hospital of Chicago has become affiliated with Loyola University, and has reorganized its staff.

The new building of the Englewood Hospital, Englewood, New Jersey, built at a cost of one million dollars, was opened November 30th. The old building will be used as a maternity ward.

The Knickerbocker Hospital of New York, is planning to raise $200,000 for an emergency building.

The Deaconess Hospital of Cincinnati, Ohio, is conducting a campaign for $500,000, for new buildings.

Funds for Rush Medical College.—The alumni of this institution, under the leadership of Dr. Ralph W. Webster, of Chicago, are endeavoring to raise $250,000 as a contribution toward the general development funds of the University of Chicago.

Rawson Laboratory Dedicated.—The Rawson Laboratory of the Rush Medical College has recently been dedicated. The building contains libraries, classrooms, examining rooms, laboratories, small operating rooms, and quarters for the Central Free Dispensary.

Gift of Old Instruments Requested.—The Dispensary Boat of China asks for instruments, apparatus, surgical supplies, and drugs, for use in its trips back and forth among the villages of the Grand Canal of China. Contributions will be received by the China Medical Boat Fund, 383 Bible House, New York.

Medical Practice in the Philippines.—The Manila Medical Society has adopted resolutions against the exemption from examination by local examiners of men holding certificates from the National Board of Medical Examiners. It is felt that physicians from other countries should take special courses before beginning practice in the tropics.

Memorials to Doctor Hunter.—The fund subscribed as a memorial to the late John Irvine Hunter, of Australia, is to be used for six objects,—a portrait for the University of Sydney; a bust for the medical school of the university; an annual oration with the award of a medal; the endowment of a library; the establishment of the John Irvine Hunter Research Laboratory, for clinical research; and the establishment of annual scholarships for research workers in the laboratory. Research will be encouraged on diseases commonly found in Australia, with special reference to children's diseases.

Gifts and Bequests.—The Hospital for Joint Diseases, New York, has received a seaside home for convalescent patients, at Far Rockaway, Long Island, and an endowment fund for its maintenance, making a gift of $1,250,000. The donor was Albert M. Heinsheimer, a member of the board of managers.

The following New York hospitals,—Broad Street, Mount Sinai, New York, Mount Lebanon, Presbyterian, and St. Vincent's, have been bequeathed $30,000 each in the will of the late Mrs. Mathilde G. Sterne.

The will of the late William Hull Wickham provides $10,000 each for St. Vincent's Hospital, the Home for Incurables, Roosevelt Hospital, New York Dispensary, and the Southside Hospital at Bay Shore.

The will of the late Harry Evans of New York provides $305,000 for the Associated Hospitals and $610,000 for the hospital conducted by the Servants for Relief of Incurable Cancer.

Personal.—Dr. J. Victor Haberman has been appointed special consultant in neuropsychiatry to the United States Employees' Compensation Commission.

Dr. Isaac A. Abt has been appointed attending physician in diseases of children at St. Luke's Hospital of Chicago.

Dr. Seymour Basch has been appointed professor of clinical gastroenterology at the Polyclinic Hospital, New York.

Three new directors have been elected for the Physicians' Home,—Dr. George David Stewart, Dr. George Dow Scott, and Dr. Ward Bryant Hoag, all of New York.

Dr. Frederick H. Falls, of the Iowa State University, is to be professor of obstetrics and gynecology, and head of the department, at the University of Illinois College of Medicine, Chicago.

Dr. Edmund B. Piper succeeds the late Dr. John Cooke Hirst on the staff of the Philadelphia General Hospital.

Dr. T. A. B. Denison, superintendent of the Lakeside Hospital of Cleveland, has resigned to enter private practice.

Dr. Carl Hedblom of the University of Wisconsin, has received an appointment as professor of Surgery at the University of Illinois College of Medicine.

Dr. Clarence H. Harris has been appointed health officer of Louisville, Kentucky.

Dr. Alfred J. Asgis of New York City delivered a lecture before the Dental Hygienists Association of New York City on Public Stomatology and Ulotropsis, at the New York Academy of Medicine, on December first. He also spoke in Philadelphia, before the Eastern Dental Society, on Pyorrhea Alveolaris, Dentoalveolar Stomatitis and Ulotropsis, on Thursday, December third.

Society News and Notes.

On December 18th Professor Wolfgang Köhler of the University of Berlin gave the annual address before the New York Society for Clinical Psychoatry, at the Academy of Medicine. Prof. Köhler's subject was the Psychic Life of Apes.

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On January 12th, at 4 p. m. at the New York Academy of Medicine, Paul Klapper, Ph.D., Dean of the School of Education of the College of the City of New York, will speak on Mental Tests—Their Uses and Interpretation. On January 19th at the same place and the same hour, Stanley P. Davis, Ph.D., Executive Secretary of the New York State Committee on Mental Hygiene, will read a paper on Applying Mental Hygiene to the Community.

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The Library of the New York Academy of Medicine will open on January 15th an exhibit on the history of appendicitis. This exhibit will be supplementary to the address to be given on January 28th before the Section of the History of Medicine of the Academy by Dr. Robert T. Morris on the Evolution of the Subject of Appendicitis. One of the features of this exhibit will be a chronological bibliography covering the years from 1739-1899 inclusive, compiled by Dr. Edebohl and presented by him to the Library.

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For the first time in twenty-four years the State Conference of Charities and Correction was held in New York City, December 8th-11th, at the Hotel Roosevelt. Among the speakers were Dr. Amos T. Baker, Dr. Matthias Nicoll, Jr., State Commissioner of Health, Dr. C. E. A. Winslow, and Dr. Haven Emerson.

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The Society for the Prevention of Cruelty to Animals has announced that Humane Sunday in 1926 will be April 11th, the first Sunday after Easter. "Be Kind to Animals Week" will extend from April 11th to 17th.

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Dr. Israel Weinstein lectured on the Psychology of Insanity on the evening of Sunday, December 13th, before the forum of the Hebrew Educational Society.

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The twentieth annual meeting of the Woman's Medical Society of New York will be held at the Hotel McAlpin, New York City, on Monday, March 29, 1926, beginning at 9:30 a. m.

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The next annual meeting of the American Gynecological Society will be held on Thursday, Friday and Saturday, May 20-22, 1926, at the Red Lion Inn, Stockbridge, Mass.

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The following officers for 1926 were elected at the recent annual meeting of the Royal College of Physicians of Ireland: Dr. T. Henry Wilson, president; Dr. W. A. Winter, vice president and censor; Sir John W. Moore, representative on General Medical Council; Dr. H. T. Bewley, treasurer; Dr. T. Percy C. Kirkpatrick, registrar; Mr. R. Phelps, librarian. Jane Elizabeth Waterson, M.D., M.R.C.P.I., of South Africa, was elected a Fellow of the College.

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The American Association of Hospital Social Workers elected at its recent annual meeting the following officers for 1926: Mrs. Maida H. Solomon, of Boston, president;; June Lyday, of Iowa City, vice president; Margaret L. Wirt, of Boston, secretary-treasurer; other members of the Executive Committee, Mary C. Jarrett of Boston, Katherine Moore of Chicago, Helen L. Myrick of Chicago, and Mrs. Margaret J. Powers of New York.

* * *

British medical and scientific societies are enjoying this season an unusual number of interesting lectures. The Bradshaw Lecture of the Royal College of Surgeons of England was delivered November 11th by James Sherren, C.B.E., F.R.C.S., on the subject of Gastrojejunostomy. The Thomas Vicary Lecture was delivered on November 18 by Prof. William Wright, D.Sc., F.R.C.S., on the Medieval Conception of the Anatomy and Physiology of the Central Nervous System. The first of the series of Chadwick public lectures was given on October 22d by Sir Lawrence Weaver on the subject of Cottage Problems, Rural and Suburban; Recent Developments; on October 30th and November 6th at the Sanitary Institute, London, Dr. Howarth, Medical Officer of Health, lectured on the Control of the Food Supply; Prof. E. P. Cathcart of Glasgow University spoke on the Food Question in several townships during the latter part of October. Dr. J. D. Rolleston lectured on October 28th at the Royal Institute of Public Health on Prevention and Arrest of Diphtheria.

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Dr. Jaques Forestier of Paris and Aix-les-Bains is lecturing in New York and other large cities of the country on lapiodol, which he was among the first to use. Dr. Forestier is here in the interests of the *Union Nationale des Associations d'Etudiants re France.* Other recent foreign visitors of note in New York recently were Dr. Mario Julia of Porto Rico, who is interested in neuropsychiatry; Dr. S. Zlattogoroff, of Leningrad, director of the Bacteriological Institute of Kharkov; and Prof. Wolfgang Köhler, of the University of Berlin.

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The Medical Association of the Greater City of New York met on December 21st at the Academy of Medicine. Dr. S. Adolphus Knopf read a paper on Birth Control—Sanitary, Medical and Moral Aspects; Dr. Isaac Hartshorne spoke on Recent Progress in Treatment of Cataract; and Dr. Ellice M. Alger read a paper on Ocular Danger Signals.

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The Clinical Society of Reconstruction Hospital met on December 17th. The program included a paper on the Pathology of Fractures of the Skull, by Dr. S. B. Cassassa, Assistant Medical Examiner of the City of New York, and presentation of cases by the staff.

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The third lecture in the series of the Harvey Society was given at the New York Academy of Medicine on December 12th. Prof. Warren H. Lewis of the department of physiological anatomy at Johns Hopkins Medical School spoke on the Origin of Macrophages and Epitheloid Cells from Mononuclear Blood Cells.

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The midwinter session of the American Electrotherapeutic Association and affiliated Eastern societies, comprising the New York Electrotherapeutic Society, the Philadelphia Electrotherapeutic Society, and the New England Association for Physical Therapeutics is being held at the New York Academy of Medicine, January 6th and 7th. There will be a clinical session on Friday, January 8th, at the Reconstruction Hospital and at the Beekman Street Hospital. On Wednesday, the 6th, Dr. William D. McFee, of Haverhill, Mass., speaks on Physiotherapy in the Treatment of Arthritis; Dr. Frank B. Granger, of Boston, on Subdeltoid Bursitis; Dr. William B. Snow, of New York City, on Treatment of Local Septic Infection; and Dr. William T. Johnson, of Philadelphia, on the Value of Static Currents in Preventing Baldness. At 6:30 p. m. there is an informal dinner at the City Club. In the evening occurs the stated monthly meeting of the New York Electrotherapeutic Society, at which Dr. Morris Fishbein, editor of the *Journal of the American Medical Association,* speaks on the Council of Physical Therapy; Dr. William C. Phillips, of New York, president-elect of the association, will also be heard. These papers are to be followed by a symposium on diathermy, in which the chief speakers will be A. Mutscheller, Ph.D., of New York, whose paper is on the Physics of High Frequency Currents; A. P. Mooradian, also of New York, who demonstrates the Construction of High Frequency Apparatus; and Dr. Frederick DeKraft, of New York, whose paper is on the Clinical Action of Diathermy. On Thursday morning at 9:30 there will be held a symposium on radiotherapy, in which Dr. Sinclair Tousey, of New York, will speak on the Dangers of X Rays; Dr. J. Douglas Morgan, of Philadelphia, on Small Versus Large Doses of Deep X Ray Therapy; Dr. Mary L. H. Arnold Shaw, of New York, on X Ray Therapy of Uterine Hemorrhage and Fibroids; and Dr. G. Allen Robinson, of New York, on Radium Therapy. In the afternoon at 2 Dr. William H. Schmidt, of Philadelphia, will read a paper on the Surgical Uses of High Frequency Current; Dr. G. Betton Massey, of Philadelphia, will speak on Wave Currents in Intestinal Inactivity; Dr.

Richard Kovacs, of New York, on Physical Therapy in Chronic Poliomyelitis; and Dr. Frank T. Woodbury, of New York, on the Present Status of Phototherapy. The clinical session on Friday morning at the Reconstruction Hospital will begin at nine, and will include interesting demonstrations by Dr. Kovacs and Dr. Edward C. Titus, and the presentation of cases under active physiotherapy by Dr. Seth H. Milliken, Dr. William V. Healey, and Dr. Edwin A. Spies, of the attending staff. On Friday afternoon at two a session will be held at the Beekman Street Hospital, 117 Beekman Street, which will include a demonstration of physiotherapy in the treatment of fractures by Dr. Titus and Dr. Fenton Taylor, visiting surgeon. Registration cards may be obtained by all legally licensed physicians by personal application at the time of the session.

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At the First International Congress of Radiology held in London in July, the following resolutions were passed by the delegates: 1, That this Congress in London is the First International Congress of Radiology; 2, That Mr. Thurstan Holland is elected president; and that at future Congresses the delegates shall elect the president on the nomination of the country holding the meeting; 3, That the next congress shall be held at Stockholm in 1928, and Professor Gosta Forssell shall be the president, on the nomination of the delegates from Sweden; 4, That any country having a radiological society (or societies) shall be entitled to send not more than five (common) official delegates to each Congress, but only one vote shall be exercised by each country; 5, That the country in which any congress is held shall be entirely responsible for all the congress arrangements, financial and otherwise; 6, That Professor Gosta Forssell be appointed chairman; Mr. Thurstan Holland, vice-chairman, and Dr. Stanley Melville (secretary general of the London meeting) secretary of the International Delegate Committee until the next meeting of the delegates; 7, That these resolutions shall be forwarded to the editors of radiological journals with a request for publication.

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The January schedule of meetings at the New York Academy of Sciences includes that of the Section of Biology on January 11th; the Linnaean Society of New York on January 12th; the Torrey Botanical Club on the same date; the Brooklyn Entomological Society on January 14th; the New York Microscopical Society on January 15th; the New York Entomological Society on January 19th; the New York Mineralogical Club on January 20th; the Aquarium Society on January 22nd; the Section of Anthropology and Psychology of the New York Academy of Sciences on January 25th, the American Ethnological Society on the same date; the Linnæan Society on January 26th; and the Torrey Botanical Club on January 27th.

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Meetings held during the latter part of December at the New York Academy of Medicine include the stated meeting of December 17th, arranged in cooperation with the Section of Laryngology and Rhinology, when Dr. Thomas J. Harris read a paper on End Results of Tonsillectomy with Special Reference to the Legal Responsibility; the Section of Genitourinary Surgery on December 16th at which the program was contributed by the urological staffs of St. Luke's and the Woman's Hospitals; Dr. John A. Taylor read papers on Multiple Fractures of the Pelvis and Rupture of the Bladder, and Tumor of the Prostate; Dr. George F. Hoch spoke on an Unusual Rupture of a Pyonephrotic Kidney, and Calcification of Ovary as an Extraurinary Shadow; Dr. Francis E. DuBois read papers on Papilloma of the Bladder with Surgical and Postoperative Complications, and a Case of Herpes of the Bladder; and Dr. Henry G. Bugbee spoke on Some Interesting Problems in Kidney Surgery. The Section of Orthopedic Surgery met on December 18th. The program consisted largely of the presentation of cases by Dr. Abraham Urevitz, Dr. Benjamin Koven, Dr. Morris T. Koven, Dr. Henry H. Kessler, Dr. Carl R. Keppler, Dr. Charles Dwight Napier, Dr. Walter Truslow. Dr. Joseph B. L'Episcopo, Dr. Jacques C. Rushmore, and Dr. Herbert C. Fett; the paper of the evening was on Synovectomy in Infectious Arthritis, by Dr. Paul Swett, of Hartford, Conn. The Section of Ophthalmology met on December 21st. Cases were presented by Dr. Thomas H. Curtin, and papers read on Protein Therapy in Practice, by Dr. Ben Witt Key; Use of Uveal Pigment in Synpathetic Ophthalmia, by Dr. Alan C. Woods, of Baltimore; Some Special Features in the Lens Antigen Protein Treatment, by D. A. Edward Davis. The Section of Obstetrics and Gynecology met on December 22. Case reports were given by Dr. S. Krell and Dr. Armitage Whitman; Dr. Harbeck Halsted read a paper on Full Term Ectopic Pregnancy.

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At the last meeting of the American Stomatological Association held in New York City on November 16, 1925, the following officers were elected for the year 1925-1926: President, Dr. Weston D. Bayley, of Philadelphia; president-elect, Dr. George Reese Satterlee, of New York; first vice-president, Dr. Joseph Colt Bloodgood, of Baltimore; second vice-president, Dr. Oliver T. Osborne, of New Haven; treasurer, Dr. Robert H. Rose, of New York; secretary, Alfred J. Asgis, D.D.S., of New York.

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On the evening of December 21st at the Waldorf Astoria the New York Academy of Sciences gave its annual dinner, followed by the annual meeting. The first address of the evening was by Prof. Ernest W. Brown, of Yale University, on the Prediction of an Eclipse. A very interesting motion picture was shown. The second address was given by Prof. Charles P. Berkey, of Columbia University, on the subject of the third Asiatic expedition to Mongolia. Prof. Berkey is a member of the Roy Chapman Andrews Expedition into Mongolia, and has recently returned from the 1925 expedition into the Bobi Desert. The lecture was illustrated by lantern slides and moving picture films.

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The Travel Study Club of American Physicians has just announced the itinerary of its 1926 study tour. Those making the tour will sail from New York City, Saturday, June 12th, on the Stavangerfjord, due to arrive at Bergen on the 21st. The countries visited will include Norway, Sweden, Denmark, Germany, Switzerland, France and England. Returning, tourists will sail from Southampton, Saturday July 31st on the Cameronia, due to arrive in New York on August 8th. A short tour from July 9th-24th has also been arranged. The cost of the main tour will be $985; with Italian extension, $1,145; short tour, $725. Medical points of interest to be visited are the University of Christiania, at Oslo, Stockholm, with the Sabbatsberg Hospital, the Seraphin Hospital, Maria Hospital, Garrison Hospital, and the Radium Institute; Copenhagen, with the Finsen Light Institute, and the Bispjere and Riks Hospitals; Hamburg, with the Eppendorfer Krankenhaus, St. Georg Krankenhaus, and Institut für Schiffs und Tropenkrankheiten; Cologne's Academy of Practical Medicine; the Universities of Heidelberg, Strassbourg, Zurich, and Berne; the Cantonal Krankenhaus at Zurich; Rollier's Clinic for Crippled Children at Leysin; in Paris, the Hotel Dieu, and the Hospitals of Saint Louis, the Salpêtrière, de la Pitié, Pasteur Institute, Academy of Medicine, and School of Medicine; in London the Hospitals of St. Bartholomew, St. Thomas, and others, and many societies and institutions.

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The adoption of the recommendations of the Special Committee on Nursing of the Medical Society of the County of New York constitutes the first really decisive step taken by the profession to remove the artificial obstacles placed in the way of the recognition of training schools today. Every doctor and hospital feels the shortage of nurses for home and institutional care. The conviction is general that this is due in large measure to the arbitrary attitude of the State Department of Education in the matter of academic and domiciliary details.

The plan accepted by the New York County Society calls for the regulation of nursing education in the Metropolitan district by the official medical organizations of the Greater City. It is in the capacity of deputy to the doctor that the nurse serves. The physician should have the privilege accorded every group of deciding what the qualifications of his assistants shall be.

Acting upon this premise, a Joint Committee representing the five county societies of the city will formulate a set of minimum standards for the guidance of training schools and will certify all institutions that comply with its requirements irrespective of whether they enjoy state approval or not. While the minutiæ of the project are yet to be worked out, it is hoped to give an impetus to nurse education which will assure a constant and adequate supply of competent nurses in our city.—*N. Y. Medical Week.*

Book Reviews

PULMONARY TUBERCULOSIS

Modern Methods in the Diagnosis and Treatment of Pulmonary Tuberculosis. By R. C. Wingfield, M.B., M.R.C.P., Medical Superintendent, Brompton Hospital Sanatorium, Frimley, England. New York: Paul B. Hoeber, Inc., 1925. Pp. 134.

This practical little book describes in ten chapters our present methods of dealing with pulmonary tuberculosis. In the first chapter, which is entitled "Tuberculosis in Its Relation to the Individual and the Nation," the statistics refer only to the mortality of the disease in England and Wales. They show that in England the highest mortality is during the first five years of life, which corresponds with the conditions prevailing in all countries where careful statistics are kept.

A somewhat surprising statement is made in this chapter when the author maintains that active tuberculosis of the lungs is compatible with a useful life of the ordinary length, but that in most cases life must be lived under special conditions. By active tuberculosis we usually understand a condition which requires absolute rest, and unless this is rigorously observed the ordinary length of life is bound to be shortened.

Under diagnosis the author first reviews the well known symptoms. He deprecates, and justly so, the cutaneous and intracutaneous tuberculin tests, since they cannot give any information as to the size or activity of the lesions, nor as the author might have added, as to their locality. Complementary fixation test he also considers as of doubtful value. Concerning the results of physical examination, while appreciating its value in early diagnosis, he comes to the same conclusion at which many physicians have arrived, namely, that "even in a case of well advanced pulmonary tuberculosis with positive sputum, physical signs of the lung lesion may be very slight or even completely absent." He attaches to the x ray picture a great deal of value if it is correctly interpreted.

In chapter 3 he makes a classification of active pulmonary tuberculosis as follows: a, miliary; b, bronchopneumonic; c, pneumonic. The chronic types he divides into the fibrocaseous, fibroid and pleural types. He precedes his chapter on treatment with the following terse pronouncement: "The patient's social, financial and home conditions must be accurately assessed, for his treatment, which may take five years or more, must be adapted to suit his environment." He then quotes Bushnell's maxims, "For tuberculosis we prescribe not medicine but a mode of life."

The author considers the sanatorium the place best adapted for regaining resistance, consolidating this gain, and educating the patient. Although admitting that of the three sanatoria—the Trudeau institution in the Adirondacks, the Frimley and the Medhurst—the American institution shows the best afterresults, he favors graded labor which is not used to any appreciable extent in the Adirondacks. He gives a complete description of Patterson's work at Frimley, which consists in carrying weights, hoeing, digging, trenching, etc. Tuberculin as a curative agent he believes "is indicated in those cases in which the ordinary methods for increasing the natural immunity to the required pitch have failed."

Pneumothorax, thoracoplastic operations and phrenicotomy are given brief consideration. The author goes very thoroughly into symptomatic treatment although nothing new is offered. Under the treatment of hemoptysis we find the following statement to which we might take exception: "If the hemoptysis continues and death from actual loss of blood seems imminent, the possibility of an artificial pneumothorax must be considered." Surely, it would be better not to wait until death seems imminent before considering the advisability of pneumothorax. Pneumothorax should be tried before, and in the meantime ligation of the upper and lower extremities near the thorax by means of tight bandages should be resorted to. This latter method the author seems to have entirely overlooked.

Aside from this little criticism, some unfortunate printing mistakes, as, for example, "Sangman" instead of Saugman, and the constant use of the word "tubercular" instead of tuberculous, the book must be considered a valuable handbook, particularly for the general practitioner who may not be quite familiar with the latest methods of phthisiotherapy.

TONSIL ENUCLEATION

Submucous Endocapsular Tonsil Enucleations. Excerpts from Clinics of C. C. Miller, M.D. Chicago: The Oak Press, 1925. Pp. 1-218.

The ideal tonsil operation, or at least the one to be accepted by most of the operators for the majority of cases and the one that would minimize both complications and sequelæ, such as hemorrhage, infection, cicatricial contractions, etc,—is still a consummation devoutly to be wished, and who knows how far from attainment. We are all on the *qui vive* for such an ideal, and it was with a lively sense of expectation that we approached the review of this work, alas! to be sadly disappointed as soon as we waded through the first few pages. This disappointment grew upon us the deeper we got into the substance of this rambling, incoherent and unsystematized recital of a new operative procedure that is to replace our old methods.

The extremely vague description of the author's submucous resection of the tonsil in its capsule that does not seem to be based on any clearly defined anatomical or pathological data, occupies a few pages, most of the rest of the book being devoted to an emphatic repetition of the elementary and the very obvious in tonsil surgery that is to be found in any of our textbook presented in *readable* English, and a hodge podge on blood transfusion, theory of fermentation, germs of putrefaction, and what not.

We doubt greatly whether the author has contributed in any measure to the solution of those perplexing problems that weigh so heavily on the mind of the honest, conscientious tonsil operator.

The absence of a paged table of contents and of an index detracts greatly from whatever little value the book may contain for some readers.

ELECTROCARDIOGRAPHY

Electrocardiografia. Esterdio teoricopractico del Electrocardiogram y de sus principales applicaciones clinicas. By Dr. Tiburcio Padilla. Con 507 figunas. Buenos Aires, 1924. La Semana Medica.

This monograph of 670 pages is a very comprehensive presentation of the subject of electrocardiography. The author, who is a professor at the University at Buenos Aires, has fashioned a scholarly and masterful treatise. A well chosen bibliography of sixty-three pages gives evidence of the breadth of his reading. There are over five hundred illustrations, mostly original and well reproduced. The arrangement of the material follows the conventional plan. Chapters are devoted to the anatomy and physiology of the conducting system, to a description of the instrument, and the normal electrocardiogram and its physiological variations. Then follows a detailed study of the cardiac irregularities. Among other things, Padilla verifies the work of American authors on the significance of aborization block. As a comprehensive review of electrocardiography in its theoretical and practical aspects, this volume will take first rank in the Spanish literature.

THE HIGH FREQUENCY CURRENT IN OTORHINOLARYNGOLOGY

La Haute Frequence en Oto-Rhino-Laryngologie. Par Leroux-Robert, ancien assistant d'Otorhinolaryngologie de la Salpetrière. Paris: Masson & Cie, 1925.

Published as one of the Masson series, *Medecine et chirurgie pratiques,* this little volume discusses the application of the d'Arsonval-Bergonié modality to various affections of the ear, nose, and throat. The physics of the high frequency current and its action in such varied forms as diathermy, effluviation, diathermy coagulation and fulguration, are discussed at length. The influence of the current on the sympathetic, on colloids, and on the circulation are taken as the basis of its application in such a range of morbid conditions as chronic laryngitis, dry otitis, tinnitus aurium, nasopharyngeal fibroma, sinus headaches, otalgias, and esophageal spasm. In an interesting preface d'Arsonval refers to his first presentation of this therapeutic agent in 1896, at l'Hotel Dieu which at that time was without electrical installation.

THE SPHENOIDAL SINUS

Le Sinus Sphénoïdal. Anatomie, Exploration, Chirurgie. By Georges Canuyt, Professeur de clinique otorhinolaryngologique, and Jean Terracol, chef de clinique Otorhinolaryngologique à la Faculté de Médicine de Strasbourg. Paris: Masson et Cie. Editeurs, 1925.

This well written and exceptionally well illustrated volume offers a practical handbook to the specialist in which are united the embryology and anatomy, the methods of examination, and the technic of endonasal surgery as far as it applies to the attack on what the authors refer to as the most distant and recondite as well as the most neglected of the accessory sinuses. Without subscribing unhesitatingly to this assertion, we must admit that Canuyt and Terracol have brought together the facts scattered in many single publications, in various languages, and at different times. The elaboration of the two routes of attack, the road of the meatus and that of the turbinates, respectively, is, in itself, a noteworthy contribution to a small but most important domain of surgery. The relation of morbid conditions in the sphenoidal sinus to ocular affections, particularly to retrobulbar neuritis with rapid or even *foudroyant* loss of vision makes the appearance of this work more than ever timely.

GENERAL MEDICINE

Ergebnisse der gesamten Medizin. Unter Mitwirkung hervorragender Fachgelehrten, herausgegeben von Prof. Dr. Th. Brugsch, Oberarzt der II. Med. Klinik der Charité in Berlin. Siebenter Band. 1. und 2. Heft, Mit 63 Abbildungen im Text, 2 farbigen und 10 schwarzen Tafeln. 3, und 4. Heft, Mit 73 Abbildungen im Text und einer farbigen Tafel. Berlin und Wien: Urban & Schwarzenberg, 1925, iv-596.

In their monograph, *The Climatotherapy of Tuberculosis,* A. Bacmeister and Frank Baur show that the old belief that mountain air is the only beneficial climatic treatment for tuberculosis is erroneous. They discuss the various elements that enter into the makeup of certain types of climate and their influences upon the tuberculous process.

G. Sultan and H. Ahrens give some valuable hints in the treatment of fractures and disclocations of all the bones in the body. H. C. Jacobaeus contributes a very complete treatise on a comparatively new maneuvre, thoracoscopy, giving the details of the technic of examination and of treating (cauterizing) pleuritic adhesions. F. Cumpertz is assigned the subject of the disturbances of speech encountered in children. A very complete and interesting monograph on the relationship of eczema and urticaria, giving all the theories advanced on the subject, is the work of E. Pulay.

The relationship between the medical profession and social hygiene is discussed in its various phases by C. Coerper. H. Sellheim discusses the results from the attempts at the simplification and improvement of the Abderhalden reaction, and as a result of his studies he expresses the hope of some day being able to attack the problem of cancer by way of the blood stream.

O. Strauss briefly reviews the subject of the diagnosis and therapy of cancer. In an article on the Roentgen Diagnosis of the Gastric and Duodenal Ulcer, F. M. Groedel and H. Lossen endeavor to erect the structure of pathological roentgen anatomy and pathologic roentgen physiology from the normal roentgen anatomy and roentgen physiology, thereby to place the roentgen symptomatology of the individual diseases, that has been evolved in an empirical manner, upon a scientific basis. P. Reckzeh discusses the clinical and experimental aspects of ankylostomiasis. Infantile tetany is described by E. Nassau. J. Zappert discusses the problem of the nervous child very exhaustively.

The article on suggestion and autosuggestion is the work of E. Raimann. The expert opinion of questionable mental conditions in criminal trials is amply discussed by W. Vorkastner. E. Kylin discusses the adrenalin blood pressure reaction and its clinical significance and maintains that this reaction is of great assistance in diagnosis. Nicotinism is the subject assigned to H. Kionka and he supplies a very good and instructive review. Typhus fever is the product of the pen of D. D. Pletnow, who gives a comprehensive résumé of the subject.

Medicoliterary Notes.

The edition for 1925, of the Medical Directory of New York, New Jersey and Connecticut, is just out. Those who use it for reference will be pleased to see that the list of hospitals in New York State, and also that of medical colleges, both of which have been discontinued since 1917, have been resumed. It is hoped that the next issue will include the list of other State and local institutions which formerly added to the directory's value as a reference work.

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Two useful and interesting little books have recently been published by William Heinemann, of London, with an American edition of one from William Wood & Co. These are: *The Culture of the Abdomen: The Cure of Obesity and Constipation,* by F. A. Hornibrook (second edition), and *Sex and Exercise:* A Study of the Sex Function in Women and Its Relation to Exercise, by Ettie A. Rout (Mrs. Hornibrook). Both are written in popular style, particularly for lay reading, and are excellently illustrated.

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An attractive little facsimile reprint is that of *Pictor's Tract of the Renal Calculus* (1557), with an English translation, by Dr. Charles Greene Cumston. The edition was limited to 400 copies. It is beautifully printed in the old type by Albert Kundig, of Geneva, Switzerland.

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Much curious information about the vast human hive known as London, is contained in a statistical abstract issued by the City Council. Among many things, it is shown that there are not enough men to go around. The bachelors number 539,700, and the widowers 72,459, while there are 725,884 single women, and 223,615 widows. The number of husbands is 865,300, while the number of married women is 887,298. The total number of men is 1,477,459, and of women 1,821,797. London has a large appetite, consuming last year 480,520 tons of meat, poultry and provisions. Billingsgate Market sold 184,080 tons of fish. There was not a single death from smallpox last year. London's night schools were attended by 117,358 students. Institutional poor relief was given to 69,743 persons. . . . The resident population of the "city," the original nucleus of the metropolis and business centre, has now dropped from 128,128 in 1801 to 13,709, but the day population increased from 261,061 in 1881 to 436,721 in 1921. The London Council's total expenditure last year was 25,236,971 pounds sterling. There were 7,111 fire alarms last year, 2,292 of them were false. The fire damage was more than 900,000 pounds. There are 8,058 saloons in London. . . . There were 19,000 fewer marriages last year than in 1915.—*N. Y. Times.*

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A pamphlet has recently been prepared by Smith, Kline & French, of Philadelphia, manufacturers of phosphates, on *Recent Studies Concerning the Metabolism of Phosphorus.* In the past decade physiological chemists have devoted much study to the function of phosphorus in the human body, and their recent findings have been extremely suggestive in regard to the relation of phosphorus compounds to fat assimilation, milk secretion, bone formation, etc. The metabolism of phosphorus is very directly associated with disease, so the above mentioned pamphlet will be of interest to physicians, since it covers in brief the work done on phosphate metabolism. Physicians may have copies of the pamphlet upon application to the Smith, Kline & French Co.

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Dr. I. L. Broosilovsky, of Moscow, is the author of a pamphlet of unusual interest which has been received by medical friends in New York City. The title is the *Prevention of Diseases of the Nervous System and Standardization of Mental and Physical Labor.* Dr. Broosilovsky advocates "visas" for motherhood, based on an examination of all girls of seventeen on questions connected with motherhood and child care. He suggests as an excellent innovation "individual sanitary passports" based on a careful examination of every infant at registration of his birth. He makes a plea for health of mothers and proper home and school environment, education of adolescents to meet the crisis of puberty, and careful sex education. Taking as a premise that refraining from the sexual act does not bring about harmful results to the organism, he advocates deflecting all creative energy into the channels of physical culture and other wholesome distractions, and raising the awareness of youth to the importance working out of the creative instinct to the individual and to society, where the individual creative instinct, growing out of the idea of healthy and rational labor, will be the basis of individual and communal welfare.

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Animals cannot be used as standardizers for the use of pharmaceutical preparations for man, writes Dr. Fritz Küts, Privatdozent für Pharmakologie, Leipzig, in an article in the *American Journal of Pharmacy.* The degrees of senstiveness of man and animals to particular drugs vary so widely as to make experiments tried on animals in many cases useless as applied to human physiology.

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The Lord's Will, recently published by Henry Holt & Co., is a collection of American plays, by Paul Green, author of *No 'count Boy,* the play which won the Belasco cup in 1925. Mr. Green is a member of well known Carolina Playmakers, seen in New York during the holidays. *No 'count Boy* is included in the collection.

* * *

A whisper is used in the French army to test the hearing of recruits, according to a recent article in the *Lancet.* A candidate who cannot hear a whisper at the distance of eighteen inches is rejected, althought he may be accepted for auxiliary services if he can hear it at a distance greater than nine inches.

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Mail Order Medical Frauds, is the title of an interesting and very informing article in the *Nation's Health* for November, by Rush D. Simmons, chief post office inspector of Washington, D. C.

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Bombay, India, has extended its rent laws through 1928. This was done at the July session of the Legislative Council. The rent of business premises had been free from control since August 31, 1924, and control of house rents was to expire on December 31, 1925. It was shown, however, that, while rents of the better class of dwellings were falling, there had been practically no reduction in the rents of the working class houses.

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Heredity and Culture as Factors in Body Build is the title of an interesting article in *Public Health Reports* for November 27, 1925, by C. B. Davenport and Louise A. Nelson, of the Carnegie Institution of Washington.

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The British press reports that artificial sunlight baths have been installed at Drury Lane Theatre, London, for the benefit of the company and staff. These baths are free, and have a total radiation of 100,000 candle power. The installation was made under the supervision of Dr. F. Howard Humphris and Dr. Cecily Maude.

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A recent valuable publication of the Child Study Association of America is entitled *The Child First Books;* a Study of the Best Picture and Story Books Available for the Preschool Child, prepared by Elsa H. Naumburg. Prof. Arnold Gesell, of Yale University, has written a foreword. The books listed are not confined to publications in the English language, but are drawn from those of Germany, France, Scandinavia, Czechoslovakia and other countries.

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Robert Keable, the young English writer, who has been ill for some time in San Francisco, has gone again to Tahiti, taking with him garden and farming tools, seeds and plants, and chickens, and cats and canary birds for company.

* * *

A useful liaison exists between the Company of Fishmongers of London, and the local health authorities, reports the *Analyst.* When a batch of shell fish is to be condemned, the routine procedure of the health authorities is so slow that great hardship results to the food dealers. The health authorities, therefore, have recourse to the well known short method of twenty-four hour incubation of samples aseptically obtained from suspected shell fish for Bacillus Coli in suitable dilutions of bilesalt broth and litmus milk. Acidity and gas are taken to indicate the presence of the bacteria and the inference is drawn that the batch will be condemned under the slower tests. Immediate action on the part of the Company of Fishmongers, enables the requiremnts of the health authorities to be carried out without delay.

Abstracts from Current Literature

GASTROENTEROLOGY

X Rays in the Diagnosis of Organic Diseases of the Colon.—Arthur F. Hurst (*British Medical Journal*, May 23, 1925) states that in estimating the value of radiology in the diagnosis of organic diseases of the colon, it is necessary to compare it with the other available methods of confirming, or otherwise, suspicions aroused by consideration of the patient's history. Apart from the ordinary physical examination of the abdomen and digital examination of the rectum, the only direct means of investigating intestinal diseases are the x rays, investigation of the stools, and sigmoidoscopy.

An x ray examination after an opaque meal never reveals an obstruction of the colon which cannot be recognized with an opaque enema, but it is useful in the diagnosis of obstruction of the small intestines, especially near the end of the ileum. An opaque enema shows the presence of obstruction at a comparatively early stage, often long before localizing symptoms develop. But a negative result does not exclude a growth of the colon. An opaque enema is the only certain clinical means of recognizing diverticula of the colon. This is of great importance, as it may be impossible, even at an explanatory operation, to distinguish between a growth and an inflammatory mass secondary to diverticulitis. That ulcerative colitis may lead to stricture on healing has also been shown by x rays. In these cases, delayed recovery, whether an appendicostomy has been performed or not, is thus an additional indication for x ray examination.

Microscopical examination may show the presence of blood corpuscles and pus in stools which look normal to the naked eye. Much more frequently blood can be recognized by chemical means and by the discovery of hematoporphyrin or acid hematin with the spectroscope.

The sigmoidoscope is so invaluable in diagnosis that every practitioner should learn to use it himself in cases of supposed colitis or unexplained disturbance in the functions of the bowels. With its aid a growth of the upper part of the rectum or lower part of the pelvic colon can be recognized before it can be felt—often before a barium enema shows any definite abnormality.

Spread of Cancer of the Rectum.—As a result of 1, noting the position of metastases during the performance of operations; 2, observing the locality affected by recurrent growth either clinically or during the performance of secondary operations; 3, recording the extent and the position of metastases in cases in which proposed operations had been abandoned on account of their presence; 4, studying the postmortem findings in regard to the spread of cancer in patients who had died from advanced and inoperable cancer, and 5, following the detailed examinations, macroscopic and microscopic, of specimens removed by operation, W. Ernest Niles (*Lancet*, June 6, 1925) has been able definitely to determine the tissues that are liable to metastatic deposit during the progress of the disease and to recurrence after restricted operations. These tissues are the ischiorectal fat, the levatores ani muscles, the pelvic peritoneum, and the pelvic mesocolon, and they are directly concerned with the spread of cancer from the rectum. Pathology teaches us that they may be the seat of metastatic deposits even when the growth in the rectum is in a clinically early stage, and that unless these highly dangerous tissues are completely removed in every case in which an operation for the removal of the cancerous rectum is undertaken, postoperative recurrence will be the rule to which there will be few exceptions.

Diet that Puts the Gastric Ulcer Completely at Rest.—Alexander Jarotzky (*Schweizerische medizinische Wochenschrift* June 4, 1925) proposes a very simple diet for the treatment of gastric ulcer. After the onset of a severe hemorrhage or during it, the patient is kept in bed and is given the raw white of an egg in the morning and twenty grams of fresh unsalted butter at about 3 p. m. This is increased every succeeding day by one white of egg and twenty grams of butter, so that on the tenth day, about the whites of ten eggs and 180 grams of butter are given. Aside from this food, the patient is given nothing to eat or drink—no drugs and no nutritive enemas. This diet fails only in the cases of very marked obstructions (stenoses) in the region of the pylorus or that of the anastomotic opening. To apply this diet for longer than ten days would be to disturb him unnecessarily. After this period the patient is given egg albumen in the morning, and in the afternoon strained soups, which are made in water without salt and with fresh unsalted butter from various cereals (rice, manna, barley, etc.), then mashed potatoes and various purées of vegetables (also cooked in water, without salt, and with butter). Absolutely no milk is given during the whole treatment.

Intestinal Obstruction Due to Ascaris Lumbricoides.—Sidney H. Glass and Charles James Bloom (*Archives of Pediatrics*, September, 1925) report a case of intestinal obstruction due to Ascaris lumbricoides in a white boy of nine years and propose questions on the cause of the abrupt obstruction which resulted in the child's demise. During the seven days of treatment fifteen minims of carbon tetrachloride were administered the second day, and subsequently stimulants when the patient grew depressed and refused nourishment. The questions are: Was the obstruction influenced by carbon tetrachloride, codeine, alcohol, or toxins liberated from the dead worms? Then, too, if surgical intervention had been sought earlier, would the boy's life have been spared. The partial autopsy showed eight feet of the intestines to contain continuous masses of worms.

Colon Bacilli in the Digestive Tract, Especially in Connection with Pernicious Anemia.—Francesco Paolo Tinozzi (*Klinische Wochenschrift*, May 21, 1925) draws the following conclusions from his experimental studies on the subject:

1. Numerous bacteria, that are visible in the smear specimen but cannot be cultured, are found in the gastric juice of every individual.

2. The content of bacteria that can be cultured depends upon the total acidity and the content of free hydrochloric acid in the gastric juice. Studies on corpses do not show the same results.

3. There is no essential relationship between the hemolytic property and the virulence of the colon bacilli, inasmuch as there are strains showing very slight virulence among the markedly hemolytic strains.

4. In a patient afflicted with pernicious anemia and an artificial anus there was, along with the improvement in clinical symptoms, a diminution in the number of bacteria in the gastric and intestinal juices and an increased power of agglutination in the blood serum; with an aggravation of the condition, on the other hand, the reverse was found.

5. In this patient, the strains from the stomach showed a greater power of agglutination than those excreted along the fistulous tract.

6. The hemolytic strains show a greater power of agglutination than the nonhemolytic strains.

7. There is a reciprocal relationship between the agglutinating power and the virulence: the most virulent strains are also those showing the greatest power of agglutination.

Hemoclasic Crisis Test for Liver Function.—A. F. Bernard Shaw (*British Medical Journal*, May 16, 1925) finds that Widal's hemoclasic test for liver function lacks a theoretical basis, and in practice is of no value in the diagnosis of hepatic insufficiency. During physiological rest the number of leucocytes in the peripheral blood is subject to considerable and rapid fluctuations, though there are phases in which a state of equilibrium exists. There is no evidence that the ingestion of milk, casein, butter fat, and distilled water in certain quantities, or the local application of cold, influences the leucocytic content of the peripheral capillary blood, the oscillations following these stimuli being the same as the physiological variations during rest. The phenomena of "digestion leucocytosis" and "digestion leucopenia" described in connection with the hemoclasic test are simply physiological variations and not the response to ingestion of foodstuffs. The conflicting conclusions as to the value of the hemoclasic test arise from a failure to recognize that normally the leukocytic content is in a state of flux, and consequently that a single count made before the test does not represent a state of equilibrium.

Gastric and Duodenal Ulcer Variously Treated.—Theodore C. Greene (*Boston Medical and Surgical Journal*, June 18, 1925) has made a study of the results of medical and surgical treatment of gastric and duodenal ulcers at the Peter Bent Brigham Hospital, and gives this summary of the results: Complete relief, thirteen medical, ninety-three surgical; partial relief, eleven medical, seventeen surgical; no relief, eleven medical, six surgical; complications, four medical, one surgical, making a total of thirty-nine medical and one hundred and seventeen surgical.

Of one hundred and seventeen patients treated surgically and followed, 79.5 per cent. obtained complete relief, 14.5 per cent. obtained partial relief, 5.1 per cent. obtained no relief, and 0.9 per cent. suffered a hemorrhage. All those obtaining no relief underwent a second operation which was successful in all the cases, four in number, who replied to followup letters.

In two hundred and fifty-nine consecutive operations upon elective and uncomplicated cases of gastric and duodenal ulcers, there were five deaths, a mortality of 1.9 per cent.

The author points out that medical treatment is not without its dangers and finally says that in choosing between medical and surgical treatment, the intelligence and ability of the patient to cooperate must be considered, as well as the clinical aspect of the case.

Sporothrix Infection of the Large Intestine and Fingernails.—Thomas R. Boggs and Hiram Fried (*Bulletin of the Johns Hopkins Hospital*, September, 1925) report a case with clearcut dysenteric colitis, apparently due to a streptothrix infection, which is the first on record. The patient had had a gradual and painless thickening of the fingernails for years, and she had been in the habit of biting her fingernails. An acute and severe dysentery occurred, with from ten to twenty stools a day. From these an organism which in size and characteristics conformed generally to the Sporothricium schenckii was recovered in pure culture, although it is not certain that it belonged to this species. Effective treatment was finally instituted by the use of gentian violet given in capsules with a salol coating, which just allowed the color on the dye to show through, these passing the stomach without being dissolved, but staining the intestinal contents deep purple. Such pills were given every six hours, and almost immediately the organisms began to diminish in the stools, and after a week could no longer be recovered on culture nor demonstrated in microscopic examination.

Effect of Additions of Fluorine to the Diet of the Rat on the Quality of the Teeth.—E. V. McCollum, Nina Simmonds, and J. Ernestine Becker (*Journal of Biological Chemistry*, April, 1925) carried out experiments to determine whether, using certain diets, the addition of amounts of fluorine comparable to what might be expected to occur in natural foods would favorably influence the teeth in rats. The inclusion of 226 parts per million of this element in the form of sodium fluoride was tried. The results showed, contrary to expectations, that the ingestion of fluorine in amounts but little above those which have been reported to occur in natural foods markedly disturbed the structure of the teeth.

CARDIOVASCULAR DISORDERS

Functional Heart Disease in Children.—Mansfield G. Levy (*Archives of Pediatrics*, September, 1925) reports that he has found some instances of heart disease that might be mistaken as functional but were due to organic causes. In his experience not all the arrhythmias or irregularties of the heart, as heard by the stethoscope or felt at the pulse, are simple sinus arrhythmias. There are organic irregularities that may be explained by the presence of a myocarditis or a pericarditis; in fact if it were possible to autopsy cases of irregularity, many of them migh show evidence of a true myocarditis. Some of these irregularities, especially those associated with rheumatism, originate in a myocarditis that exists because of the presence of Aschoff bodies. Occasionally there are cases in which an abnormally slow heart action may be due to an infection associated with rheumatism, diphtheria, influenza, or other infection. A few isolated cases of heart-block in children in association with diphtheria have been reported.

Dr. Levy adds that simple systolic murmurs, heard most commonly over the pulmonic area, may or may not be functional.

Radium Emanation in Angina Pectoris.—J. Pelnar (*Presse médicale*, August 5, 1925) refers to encouraging results obtained by his assistant, Vanysek, with intravenous injections of radium emanation in disturbances of the vegetative nervous system, especially those which are favorably affected by periarterial sympathectomy—peripheral vasoconstrictions and trophic disorders of the distal portions of the extremities, typified by Raynaud's disease. The emanation usually moderates the irritability of the sympathetic, diminishing peripheral vasoconstriction, improving the blood supply of the affected member (as shown by oscillotonographic curves), hastening demarcation in necrotic processes and reducing pain. In some cases of obstinate angina, the emanation removed the need for the operation of sympathectomy. The procedure is particularly effective in angina pectoris with exclusively peripheral pain, where vasomotor phenomena are prominent and the pain is brought on by cold. The method is as follows: The emanation, obtained from the laboratory in a sealed ampoule, is quickly dissolved in a little physiological salt solution, distilled water added to make twenty mils, and the whole injected into a vein of the arm. A course consists of six injections, given at the rate of one to three a week. An interval of two or three weeks should then elapse before further injections are given. The dose of emanation injected is five to six millicuries. In vasomotor disturbance of a lower limb, the same favorable effects were obtained by hypodermic injections of emanation in the affected limb, in the vicinity of the lesion; for such injections the dose was only one-third millicurie, dissolved in five or six mils of water. The action of the emanation is mainly regional, even after intravenous injection; in angina it is therefore generally administered in the left basilic vein.

Low Blood Pressure in Angina Pectoris and Other Cardiac States.—V. Libensky (*Presse médicale*, August 5, 1925) observed low blood pressure in twenty per cent. and weak heart action on fluoroscopic examination in thirty-five per cent. of cases. The low pressure cases were nearly all among those showing weak heart beats. The low pressure anginal cases were found to respond poorly to treatment. The same peculiarity was noted in a special form of hypotension characterized by weak heart beats on fluoroscopic examination, normal dimensions of the heart, and normal general health. This condition was found frequently in persons practising sports to excess, in old persons indulging in active sports and in individuals undergoing forced weight reduction. The low pressure is for a long time compatible with a subjective feeling of complete health and a frequently superior degree of physical performance. Such hearts, however, are subject to sudden failure under varying stresses such as pregnancy and, in particular, chloroform anesthesia. In these patients digitalis tends to bring on arrhythmias such as alternating pulse, bigeminal pulse, complete arrhythmia with tachycardia, premature contractions, etc., as well as pulmonary embolism and in infarction. Disappointing results followed digitalis in all cases of this type, and the patients soon felt better when digitalis was stopped and replaced by theobromine and sometimes camphor and strychnine. The failure of digitalis in these cases recalled that seen in heart block. In some patients low pressure should serve as a warning against the use of digitalis, unless it be given with great caution.

Arteriotomy in Embolism of the Axillary Artery.—C. Lian and P. Mours (*Presse médicale*, September 23, 1925) report the case of a woman aged fifty-two years with high blood pressure and cardiac insufficiency in whom pain developed suddenly in the right forearm, with numbness and tingling of the hand and pallor of the entire limb. Next day no pulsations could be felt in the radial, brachial or axillary arteries, though weak pulsations were palpable at the apex of the axilla. Localized pain in the axilla led to the discovery therein of a hard, elongated body which was taken to be the artery occluded by a clot. The patient's acute exacerbation of heart weakness having already been dispelled by treatment, embolectomy under local anesthesia was undertaken. The local anesthetic employed was niketol—chemically described as ethyl paraminobenzophthalamate hydrochloride. Through a twelve centimetre incision the distal portion of the axillary was found slightly dilated, grayish and indurated. A clamp having been placed below on the brachial artery, an incision twelve millimetres long was made in the axillary along the lower portion of the occluded seg-

ment, and a dark clot twenty-five millimetres long driven out in several sections by gentle expression of the vessel. Blood spurting actively soon after, the vessel was clamped above and the operative field covered with liquid petrolatum a d compresses soaked in it, except for the segment of artery between the two clamps, in order to prevent contact of the sutures with the raw surfaces and absorption of tissue fluids by these sutures. The incision in the artery was then sutured with linen thread, the outer vascular layer of the vessel sutured with catgut, the area washed with ether to remove the petrolatum, and the wound closed. The results of the operation were completely successful, circulation and blood pressure in the affected extremity soon equalling those on the opposite side, and continuing normal. Arteriotomy for embolism deserves to be a routine procedure in cases exhibiting indications for it. General anesthesia should never be used. Embolism may be distinguished from thrombosis through the fact, pointed out by Cassaet, that above an embolism the arterial pulsations are generally of greater amplitude than those in the corresponding region on the opposite side. Spontaneous restoration of circulation in a limb following embolism is a possibility, but one should avoid delaying operation until permanent lesions of the arterial wall have been produced or an extensive clot has formed. Such a clot, by blocking the collateral vessels, prevents the later return of circulation. The writers would prefer to operate to remove the clot and then simply ligate the artery if suture is not feasible, rather than not to operate and thus allow a long clot to form and compromise the collateral circulation.

Influence of High Blood Pressure in Cataract Surgery. Frank E. Burch (*Northwest Medicine,* January, 1925) points out that abnormal arterial hypertension occurs in approximately forty per cent. of cataract cases and may not be disregarded in consideration of the operative risk. Danger of complication at operation and during convalescence is relatively slight when ordinary precautions are instituted. These precautions are definitely indicated by the sphygmomanometer and consist in the main of preliminary rest in bed, laxatives to relieve splanchnic engorgement, sedatives, restricted salt free diet and perhaps in extreme cases venesection. Very high blood pressure and its associated circulatory conditions are important causes of hemorrhage. The frequency with which high blood pressure is found associated with failures due to iridiocyclitis and chronic uveitis would indicate that the same underlying causes were factors in producing these two conditions.

The Influence of Experimental Atherosclerosis Upon the Systolic Blood Pressure in Rabbits.—Shepard Shapiro and David P. Seecof (*Journal of Laboratory and Clinical Medicine,* July, 1925) using Anderson's method, studied the systolic blood pressures of seven rabbits which were being fed lanolin for the production of atherosclerosis, and of a number of control rabbits kept under similar hygienic and dietary conditions. These observations failed to confirm the conclusions of Fahr, Van Leersum, Schmidtmann and Schönheimer that feeding rabbits with cholesterol containing substances over long periods of time causes elevation in blood pressure. These observations on blood pressure during the development of atherosclerosis in rabbits suggest that increase in blood pressure is not an essential factor in the deposition of lipoids in the intima.

Value of Venesection in the Treatment of the Decompensated Heart.—Burgess Gordon (*American Journal of Medical Sciences,* November, 1925) says that the röntgenographic examination of a series of decompensated hearts in patients with failing circulation showed a diminution in the size of the heart immediately after venesection. When this occurred, there was a corresponding improvement in the condition of the patient. It is suggested that the hearts in these cases are more efficient in a moderately dilated form than when extremely dilated. In those cases where no changes in the heart size occurred, it is felt that the muscle tone was so unresponsive to venesection because of certain anatomical changes in the myocardium that no improvement occurred in the circulation. A survey of the hospital records shows that numerous patients, bled as an emergency measure after other procedures of therapy such as drugs had failed possibly because of their delayed action, responded favorably to venesection. It seems, therefore, that venesection has a place in improving the action of the decompensated heart and temporarily at least in removing signs and symptoms of failure.

The Heart in Chronic Toxemia.—H. Clulow Nixon (*British Medical Journal,* April 11, 1925) reports that there appears to be a definite connection between leftsided preponderance and a hypertonic state of the arterial wall. When by treatment the toxins are removed, and can no longer act as irritants to the wall of the artery, leftsided preponderance disappears. Coincidently the T-wave negativity in lead III in the electrocardiogram depends on the cardiac atony, and it tends to assume its normal deflection as the toxemia becomes less pronounced, the heart regaining its power of sustained partial contraction, in which stretching is resisted. From the foregoing it would seem that the generally accepted view that inversion of T in lead III when it appears is a normal even is incorrect.

The heart responds quickly to treatment directed to the removal of the focal infection and to eliminative methods, such as are carried out in spa treatment, even though the poisoning has been of long duration. The importance of adequate treatment to the alimentary canal, particularly intestinal, cannot be overestimated.

Coronary Sclerosis.—Since there is no generally accepted conception of the clinical significance of coronary sclerosis, M. H. Nathanson (*American Journal of the Medical Sciences,* August, 1925) has constructed a clinical picture by an analysis of a series of fatal cases which came to necropsy. The following points are brought out:

1. Coronary sclerosis is most common in males and in the age period between fifty and seventy years.

2. The outstanding clinical feature is the presence of attacks, usually of pain, less frequently of acute respiratory distress. The pain is most often in the chest, but abdominal attacks are not uncommon.

3. These attacks occur with either of the following combinations: Normal sized heart, with no evidence of cardiac failure, 37.2 per cent.; normal sized heart, cardiac failure present, 26 per cent.; cardiac enlargement, congestive failure absent, 22.6 per cent.; cardiac enlargement, congestive failure present, 38 per cent.

4. The clinical features of coronary thrombosis are essentially similar to those of coronary sclerosis; thrombosis, therefore, should not be considered as a clinical entity but merely as a complication of coronary sclerosis.

5. The outstanding pathological features are the following: Changes in the coronary arteries are most marked in the left branch. In addition to coronary sclerosis, thrombosis occurs in approximately one fifth of the cases. Myocardial involvement paralleling the degree of coronary sclerosis is a constant finding. Lesions in the aorta of any significance are present in but a small percentage.

Indications for the Use of Quinidine Sulphate in Heart Disorders.—Paul D. White and Howard B. Sprague (*Boston Medical and Surgical Journal,* July 16, 1925) say that quinidine sulphate is often helpful in preventing paroxysmal auriculur fibrillation, no matter what the condition of the heart, when given in daily rations of about three or six grains in tablet or capsule form once or twice a day, or two grains two or three times a day. Patients, who are generally sensitive nervously, who have obtained relief in whole or in part from the disagreeable paroxysms of fibrillation by the use of quinidine sulphate are grateful.

Sometimes the drug is also helpful in preventing paroxysms of regular auricular tachycardia. In about half of the cases in which we have so used it there has been distinct relief, but it is less effective than in paroxysmal auricular fibrillation. In getting rid of extrasystoles or premature beats it has been ineffective in the few cases to whom we have given it.

Finally quinidine sulphate may be of much value in restoring normal rhythm in cases of recently established permanent auricular fibrillation, or of prolonged paroxysmal auricular fibrillation, in whom there is no history of congestive failure, no extensive heart disease—valvular (mitral stenosis, etc.)—or otherwise, and no sensitiveness to the drug. After it has been ascertained by a small dose (two or three grains) that the individual is not easily poisoned by the drug—and such poisoning is rare—it can be given in fairly large doses by mouth for several days without danger, provided the patient remains quiet and under close observation, so that the heart may be examined for normal rhythm or abnormal tachycardia, and toxic symptoms observed, on each occasion before the next dose is due. The toxic symptoms are those of cinchonism. The dose that we have found most

effective is six grains for five doses at two hour intervals daily until normal rhythm has appeared, toxic symptoms or signs developed, or the treatment continued without effect for a week. Although ambulatory cases may be so treated it is safer to give the drug in these large doses under close observation.

The restoration of normal rhythm in these cases of chronic auricular fibrillation may not only relieve the patient of very disagreeable palpitation, but also enable him to be physically more efficient, partly because of the relief of the symptoms and partly because his circulation is improved. In no sense of course is quinidine sulphate to be used in the treatment of congestive failure or angina pectoris—it is not intended to replace digitalis or the nitrites.

SURGERY

Contributions to the Surgery of Abdominal Hernia.—Weller Van Hook (*Boston Medical and Surgical Journal,* October 15, 1925) recommends to expert surgeons, not to amateurs, the following procedures. 1. When the patient has a "pot belly," or, whether fat or lean, has greatly relaxed abdominal walls, an operation called by him laparoplasty. On each side of the abdomen, low down, a flap is raised, pedicle above, involving the outer musculature with the attendant aponeurotic tissues. The raised masses are not unlike the lower corners of the flaps of a man's unbuttoned vest. These flaps are to be sutured back again, but with maximal overlapping. The effect is striking. The lower abdomen is "tucked in" and the inguinal regions are protected. These effects should be produced pronouncedly, but not excessively. This laparoplasty will be found a useful adjuvant in the management of abdomens subject to hernias. 2. Transplantation of the lower part of the rectus muscle or muscles to a new attachment, or to new attachments, namely to Poupart's ligament, or to the ramus or rami of the pubic bone or bones. A part of the rectus muscle, together with a great section of the anterior layer of its sheath, is lifted, except for its pedicle above, and shifted over to be attached to Poupart or to the pubic ramus. With the use of the spinal flexion already emphasized the transplantation leaves no tightness to interfere with healing and the defect made can be closed with lateral sutures or covered by free fascia lata grafts. The support given to the weak part of the abdomen is great; especially do we thus find a useful supporting buttress. The pubic bone can be drilled to provide supports for sutures, but, thus far, I have not been obliged to do more than stitch to the powerful connective tissue masses usually found attached to the bone. Poupart's ligament should be used only in the less serious cases because it is not strong enough to meet very heavy demands.

3. The external oblique muscle and its aponeurosis together with the internal oblique may be taken up as a flap by incisions at their attachment to the rectus sheath and just within the inner wall of the inguinal canal. This flap, somewhat different from that used in my laparoplasty, may be carried down to overlap and immediately to fortify the canal, especially at its lower extremity, which is often weak. This flap when carried down is also rotated a little.

4. In suitable cases, the application of powerful sutures of chromicized catgut or of connective tissue taken from the patient's own body to grasp or even to surround weak parts of the abdominal wall. The typical example of this method is that of surrounding the inguinal canal with deeply placed sutures.

By running the gloved finger along Poupart's ligament when the inguinal canal is opened that band may be readily outlined and sutures may be carried around it, and on the inner side may be passed around a great part of the costosternopubic musculature. Such sutures give a far greater security than small sutures placed from within the canal.

5. Fascial sutures are of the utmost importance in the surgery of the abdominal wall. For this purpose he has used and recommends powerful free ribbon grafts of fascia lata, of aponeurosis, or, when available, bands cut from the hernia sac. These bands from the fascia lata should be from a quarter to three quarters of an inch wide and from three to eight inches long. The external oblique aponeurosis yields usually one good graft without interference with its closure. These great transplants applied about the inguinal canal and the neighboring musculature are most useful because they are strong, aseptic, and "biologically suited" to their new environment.

Tonsillectomy by Propulsion and Avulsion.—J. Bowring Horgan (*Practitioner,* August, 1925) thus describes how he performs this operation:

"I operate with the patient in the dorsal recumbent position, the head being unsupported, and the whole body well to the right hand side of the table, on which side I stand. It is important that the table should be low in relation to the stature of the operator. I only use two instruments, a Doyen's gag, and a medium sized Jenkins' modification of the Ballenger type of reversed action tonsillectome. It is important that the blade of this instrument should be so blunt that it would, in action, be powerless to sever by manual pressure the bunched up tissues which it encircles. As obtained from the instrument makers, the instrument is invariably too sharp, and its blade should be reduced to the approximate bluntness detailed above.

In order to achieve a total enucleation in all cases, it is necessary to make sure that the blade of the tonsillectome is of the requisite bluntness, that this blade cuts well home on to a leaded groove, that one obtains a massive, but not necessarily an extracapsular hold of the tonsil, and that the latter is finally avulsed from its bed and not cut from it.

"I use the forefinger of the disengaged hand to depress the tongue and bring the tonsil into view. The ring of the instrument having encircled the tonsil, the latter is lifted forwards above the alveolar eminence of the lower jaw, the thumb or forefinger of the disengaged hand being used to apply counterpressure through the anterior faucial pillar. At the termination of this movement, and before the blade is made to close, the shaft of the instrument should lie obliquely across the patient's mouth, making an angle of about 45° with the horizontal, in which position its handle should come to lie about the level of the patient's opposite shoulder. A firm hold of the tonsil having been obtained and retained, the final or avulsive movement is initiated as soon as the handle of the instrument has been brought back to its primary position. It is a remarkable fact that the tonsil so held and pulled upon will almost invariably peel cleanly from its bed and not break away. The avulsion is best carried out by a series of very sharp tugs during which the operator's two hands are locked around the handle of the instrument. A great and seemingly alarming amount of traction is often requisite to attain the end in view. The anesthetist, who stands at the head of the table, must be advised, of this maneuvre, so that he may exert steady counterpressure with both hands which, in this manner, retain the head in its horizontal position.

Ambidexterity in the use of the instrument is essential to the rapidity of action which is desirable. Though I use reflected light, I rely rather on my tactile sense than upon my vision in the proper apposition of the instrument and the digital propulsion of the tonsil within its ring. Facility in these two matters is important if the obvious dangers of delay and the use of throat swabs are to be avoided.

Effect of Operative Interference with the Cervical Sympathetic Nervous System Upon the Growth and Malignancy of a Transplantable Neoplasm of the Rabbit.—Louise Pearce and Chester M. Van Allen (*Journal of Experimental Medicine,* October, 1925) studied the effect of the removal of the complete cervical sympathetic nervous system, of both superior and of both inferior cervical ganglia, and of a small portion of the cervical sympathetic nerve in the rabbit in relation to the character of a malignant disease induced by a transplantable neoplasm. The general character of the disease developing in the operated groups was more severe than in a control group, as shown by comparisons of the mortality rate, of the animal incidence or metastases, the number of metastatic foci, and the distribution of these secondary growths. There was apparently, however, a difference in malignancy among the operated groups themselves. The most severe disease occurred in the group where a portion of the sympathetic nerve only was removed (sympathotomy); that in the complete sympathectomy and superior sympathectomy groups was slightly less malignant; and that in the inferior group was much less so. The results are interpreted as due to a less effective animal resistance, the mechanism of which has been interfered with in some way by the interference with the sympathetic nerves. A tentative explanation for the reasons for the difference in malignancy in the several groups is suggested upon the basis of coordinating, favorable or deleterious functions subserved by the cervical sympathetic nervous system.

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Medicolegal Notes.

CONTRACT BETWEEN CITY AND HOSPITAL FOR TREATMENT OF POOR HELD TO REQUIRE COMPETITIVE BIDDING

The Kentucky Court of Appeals holds, Mosely Hospital v. Hall, 269 S. W. 1004, that a two year contract by a municipality of the third class with a hospital for care and treatment of the municipality's poor came within Ky. St. §3440, requiring advertisement for bids for a contract for work or supplies over $500. It is held immaterial that there are but two hospitals in the city, and both made application for the contract. There was no advertisement for bids and no specification of requirements or any other standard fixed by ordinance or resolution by which any contract could be submitted to competitive bidding. The contract being let without advertisement could not be declared legal because the city suffered no disadvantage by reason of the illegal manner in which it was executed.

INSURED PERSON'S FALSE REPRESENTATIONS AS TO HIS HEALTH

The Texas Court of Civil Appeals holds, Judd v. Lubbock Mut. Aid Assn., 269 S. W. 284, that where the insured is the beneficiary, and the insurer's agent, who was a kinsman of insured and the beneficiary, knew of the insured's bad health, his false representation in his application that he was in good health constituted a warrant, and the insurer was not bound by the certificate issued thereon.

WHETHER SUBSTITUTE PRACTITIONER AGENT OF FIRST HELD QUESTION FOR JURY—DOCTOR NOT OBLIGED TO USE "ALL KNOWN AND REASONABLE MEANS" TO EFFECT A CURE

In an action for damages alleged to be caused by the defendant physician and surgeon's negligence in failing properly to care for plaintiff after an operation affecting her left knee, where the evidence conflicted on the main issue as to whether the plaintiff received proper care and attention from defendant under the circumstances, the North Carolina Supreme Court held, Nash V. Royster, 189 N. C., 408, 127 S. E. 356, that the question was one for the jury. As to whether another doctor was the defendant's agent in looking after the plaintiff's case during the defendant's absence was also held to be a question of fact for the jury. Whether an agency in fact had been created was to be determined by the relations actually existing between the parties under their agreements or acts, and was not influenced by the knowledge or consent, or lack of such, of the plaintiff. Evidence of custom among local physicians was held competent as bearing on the question of agency. It was held error to charge as matter of law, that the relation of principal and agent necessarily existed by putting the patient in the charge of another doctor without the consent of the patient or her parents.

"By the clear weight of authority," the court said, "a physician or surgeon who sends a substitute practitioner to treat a case, on becoming unable personally to fill a professional engagement, is not liable for the latter's negligence or malpractice, unless the substitute acts as his agent in performing the service, or due care is not exercised in selecting the substitute practitioner. . . .

"A physician or surgeon is not bound to render professional services to every one who applies, and he may therefore, by notice or special agreement, limit the extent and scope of his employment. . . .

"But when a physician or surgeon takes charge of a case and is employed to attend a patient, unless the terms of employment otherwise limit the service, or notice be given that he will not undertake, or cannot afford, the subsequent treatment, his employment, as well as the relation of physician and patient, continues until ended by the mutual consent of the parties, or revoked by the dismissal of the physician or surgeon, or until his services are no longer needed. And he must exercise, at his peril, reasonable care and judgment in determining when his attendance may properly and safely be discontinued.

"As a general rule, in the absence of any special agreement limiting the service, or reasonable notice to the patient, when a surgeon is employed to perform an operation, he must not only use reasonable and ordinary care, skill and diligence in its performance, but in the subsequent treatment of the case he must also give, or see that the patient is given, such attention as the necessity of the case requires.

"But the law does not require of a physician or surgeon absolute accuracy, either in his practice or in his judgment. It does not hold him to a standard of infallibility, nor does it require of him that utmost degree of skill and learning known only to a few in the profession. He is not answerable for mere errors of judgment, where good judgments my differ. . . . Liability may attach for errors of judgment, however, where they are so gross as to be inconsistent with that degree of skill and competence which it is the duty of every physician or surgeon to employ in the treatment of a case."

An instruction was held erroneous which charged that "there is an implied contract that the physician will use all known and reasonable means to accomplish the object for which he is called to treat the patient." A physician or surgeon is not required to use "all known and reasonable means" to accomplish the object for which he is employed, unless by specific contract he obligates himself to do so. For errors in charging the jury, judgment for plaintiff was reversed.

CAUSE OF ACTION FOR PERSONAL INJURY CANNOT BE JOINED WITH CAUSE OF ACTION AGAINST PHYSICIAN AND SURGEON FOR MALPRACTICE

The New York Court of Appeals holds, Ader v. Blau, 241 N. Y. 7, 148 N. E. 771, that two independent causes of action, one of which alleges that the death of plaintiff's intestate was caused solely by the negligence of one defendant in erecting and maintaining an iron picket fence whereby intestate was injured in a manner causing infection and death, and the other alleges that the intestate came to the other defendant as a physician and surgeon for treatment, and that the latter so negligently treated him that, solely by reason of such negligent treatment, intestate died, cannot, under New York Civil Practice Act, sections 209, 211, 212, 258, be united in one complaint, the causes of action not being consistent and not arising out of transaction connected with the same subject of action.

STATUTORY PROVISION FOR SUPPRESSION OF RABIES

Reversing a conviction for obstructing a health officer by refusing to surrender, to be tested for rabies, a coyote which had bitten a man, the Oklahoma Criminal Court of Appeals holds, Shilkett v. State, 232 Pac. 127, that within reasonable bounds the Legislature may confer regulative powers upon the state board of health and give to that board authority to adopt rules and regulations having the force and effect of law; but where the public health statutes make no specific provision for the suppression or control of rabies and there are no averments in the information that the state board of health promulgated any rules on that subject, the courts will not assume that such rules were promulgated.

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The Influence of Oral Sepsis in the Production of Disease

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I

In this brief discussion of the part played by oral sepsis in the production of disease, it is proposed to consider only those forms or states of oral sepsis that pertain to the province of the dental surgeon. For, not every form of oral sepsis is dental in origin, nor even in its relations.

Thus, various acute and chronic septic mouth states arise in consequence of sundry specific and nonspecific infections quite apart from dental implication, as also in the course of acute and chronic maladies of general interest.

Again, although dental and gingival sepsis frequently precede the establishment of septic states in the nose, and its accessory passages and chambers, the inverse relation is not uncommon. Nasal sepsis, by inducing mouth breathing, and so altering mouth conditions, may bring about dental and gingival sepsis. Watson-Williams, indeed, has suggested that an even closer link may obtain between primary nasal and secondary dental sepsis (1).

But the interest to the physician of oral sepsis that is primarily dental or gingival by far transcends that of other forms of oral sepsis. By reason of its intractability, and of its persistent and generally progressive character, it is extraordinarily liable to provoke infections of all kinds, and degenerative conditions generally in remote or adjacent organs, or affecting the whole system. However, it is only lately that the relations between oral sepsis and other forms of disease have been discussed at all comprehensively, while, even now, opinion is divergent, debate confused, and knowledge imperfect.

Two questions in particular are often propounded. First: How do we *know* that dental sepsis is causally related to other forms of disease? Secondly: How is it, if there be such causal relation, that difference of opinion should still exist, between and among doctors and dentists, as to its extent and the part it should play in determining treatment? (2).

A third question may be added: If dental sepsis be the frequent cause of other disease that it is said to be, how is it that so much oral sepsis is found in the mouths of persons of primitive race, and of so many seemingly healthy people among us, with so little sign of consequentially impaired health?

These questions are important, and call for answer. But the answering requires consideration of some general principles which, though frequently neglected, are yet indispensable to clear thinking in matters of pathology. The most confused notions prevail, for example, as to the nature of *a* disease, and as to what is implied when we speak of *a* cause, or of *the* cause of a particular *disease*. We say, too, that we know certain general statements to be true: but few reflect on our justification for the assertion.

Disease, or disorder of health, as we conceive it to be present in the persons who consult us, is made known to us by signs, which we speak of as symptoms, as physical signs, and the like. Experience teaches us, that in each case the appearance of these signs of disease is related to a whole group of precedent conditions that we recognize as *causes* of the disease.

This recognition of causal relation is nothing more or less than the recognition, in experience, of constant or frequent association in sequence. No one has the faintest idea of the nature of the *action* that any *cause* is supposed to *exert* on the *effect* with which, in our experience, it is linked. In respect of any particular case, all the causes concerned are equally important in principle, but, when we find that, in respect of a group of like cases, one or more causes are common to every member of that group, we come to attach the greater importance to those causes, and to speak of them as *the* causes of that kind of illness.

Now the special, separate, and definite *diseases* described in our textbooks, as Sir Clifford Allbutt said so often and so justly, are not objective single things.

They are abstract, conventionalized, and formal concepts by means of which we conveniently summarize, memorize, and discuss our experiences concerning like groups of signs—symptoms, physical signs, and morbid appearances—in persons who are ill.

The special causes allotted in the textbooks to the special diseases therein described, represent those causes or associated antecedents most commonly or *necessarily* found in the like cases generalized in the description of the disease.

It is very necessary that the student should always bear in mind the distinction between particular cases

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in patients, and the abstract generalizations we speak of as diseases. Descriptions of the latter, and of their causes have not the enduring value that we can attach to descriptions of perceptual single objects, like coins or postage stamps; they are subject to revision, to rearrangement, and even to rejection as our experiences increase and our convenience demands. At the present time medicine is passing through a period in which many of our notions concerning the causation of disease in general and diseases in particular are being reconsidered.

In a formal and perfectly correct way we consider the tubercle bacillus (more correctly *infection* by the tubercle bacillus) to be *the* cause of the disease we call tuberculosis. That is to say, infection by the bacillus, if achieved, produces all the signs by which as we say the disease is known, and, no case in which all these signs are present is without infection by this kind of bacillus. But, when I consider the case of any particular patient—let me say that of the ex-service man who consulted me yesterday—I have to recognize that, for him, causes have been operative that may not be operative in every like, or nearly alike, case, but yet which have been *for him* of supreme importance. I have to decide, *for him,* what has been the causal relation of war service to the tuberculosis. But I have already decided that the precedent and obvious oral sepsis has certainly been a cause. Why? Because in my immediate (or personal) experience, as well as in the immediate experience available to me, this particular kind of case, with this history, and these signs, is so frequently associated with antecedent and continued oral sepsis of this kind that I am beginning to recognize, and even anticipate the association. So, too, my experience, and that of others, does not lead me to recognize any striking association between such war service as this man gave, comfortably ensconced in a billet at Boulogne, and the kind of bronchitic phthisis with dyspepsia, and scanty tubercle bacilli in the sputum, from which he is now suffering five years later.

It is true that, in the textbooks, infection by the tubercle bacillus is given as *the* cause of tuberculosis, or phthisis, and oral sepsis is not. Nevertheless, I am convinced that *in this case* I am right. But why? Because, though most or all of us do some time or another inhale or ingest many tubercle bacilli, only few of us suffer *infection* therewith. If those who do suffer actual infection are put in a group by themselves we find a certain number of antecedent conditions to have been common to many of them. And, by experience we come to correlate certain of these antecedent conditions with certain *types* of cases and so on. We go on then to determine causes for the subgroups, with a certain amount of crossreferencing, it is true, and ultimately learn to appreciate, as is said, the causal importance of many factors besides the textbook cause—infection by the bacillus, that is common to *all* the cases of tuberculosis.

Now oral sepsis is not a factor which, like infection by the tubercle bacillus, is always present in every case of a certain disease. And, the mere presence of oral sepsis, like the mere inhalation of the tubercle bacillus, does not necessarily involve consequent disease. But, although we admit that some persons may carry the products of oral sepsis, and the organisms of oral sepsis, as others carry the meningococcus, or Klebs-Löffler bacillus, without necessarily becoming the victim of consequent disease, we are nevertheless justified by experience and reason in making the general statement that it is frequently the cause of the most diverse kinds of ill health and disease, and in estimating its importance *in particular cases,* in accordance with what is known concerning like cases. If these notions are kept before the mind, the student will be saved the error of thinking that causes are things to be recognized as such in nature and in the laboratory, and will not need to trouble about the confusing distinctions sometimes made about predisposing causes, efficient causes, real causes, *causæ causantes,* and the like, all of which distinctions are artificial and have no direct relation with what actually happens in the clinical field.

Causation is the name we give to that kind of association in time and space between two events which experience leads us to expect, and recognize as necessary. The touchstone is experience of *what happens and is observed,* in the consulting room, in the laboratory and in the postmortem room.

A disease is the name we give to a group of symptoms, and the signs, clinical and pathological, that we associate mentally by reason of their recurrence in particular cases.

The cause of any particular disease is that cause, associated with that group of symptoms, etc., which, associated most frequently, or invariably with it, helps us best to define and delimit the disease.

The fact that oral sepsis is not associated, in this defining way, with any particular disease need in no way hamper us in recognizing its supreme importance in respect of very many cases, of very many diseases.

Now the evidence in favor of the importance of oral sepsis in relation to further disease is partly clinical, partly bacteriological and partly pathological.

Clinically we find that, in respect of certain groups of cases—of dyspepsia, of colitis, of arthritis and the like—that it is the only, or the most striking, common antecedent and factor.

Again, clinically, we find that striking alleviation often follows treatment of the oral sepsis in these kinds of cases, and we find, too, that treatment by drugs or surgery often fails unless the oral sepsis is actively treated as well. Finally, we find that, when treatment of the oral sepsis fails (though it is thought to have been a causal factor), perhaps permanent damage has been done, a blood infection has occurred, or some coincident cause of disease is persisting.

We find, too, that experience teaches us that septic conditions elsewhere than in the mouth are connected with the kind of consequences we are led to correlate with oral sepsis; we can find nothing in our experience of sepsis elsewhere than in the mouth to make us distrust the generalizations we make when we connote the experience of dentists and of doctors in respect of oral sepsis and associated disease.

We may go further. We sometimes notice a correlation between a "flareup" in the mouth, and the appearance of systemic disturbance.

We find that, of two persons—the one with a clean and the other with a septic mouth—though both be exposed to a sudden chill, or lowering influence, it is he whose mouth is unclean who suffers from acute illness. And so on. Such sets of circumstances can

be studied every day. But, because to many the idea of the correlation between oral sepsis and general disease is unfamiliar or distasteful *the clinical observation is not made.*

The bacteriological evidence is important, but is less decisive than the clinical. However, when a patient has a known gingival infection, and later becomes the subject of a blood infection by the same kind of organism, there is little room for incredulity.

The pathologist, or morbid anatomist, brings corroborative evidence into court. He finds the pathological lesions of the gums, of the bones, and of the lymphatics, to be similar to those found elsewhere in septic foci, and in relation to other disease. He finds no difficulty in telling the clinician that the connection he infers between oral sepsis and disease elsewhere is not in opposition to any principle of pathology, but in accord with all.

The whole weight of evidence, then, is in favor of recognizing, *in principle,* the great importance of oral sepsis in the production of disease. What is necessary now is to define the extent of its influence and the conditions of its exercise.

Again, two questions may be propounded. First: Why is it that in some persons oral sepsis should be relatively harmless and yet, in others, so noxious? Secondly: Why is it that oral sepsis should appear to be, to the one and same person, for long a matter of indifference, and yet suddenly to acquire importance?

The answers are not difficult to find, and are obviously interwoven. But we must beware of merely verbal explanations; of following Molière's physician who explained the soporific action of opium by alleging that the drug contains a dormitive principle.

In the course of a debate (Medical Society of London, December 11, 1922) three factors were spoken of as influencing the general effect of oral sepsis: to wit, the virulence of the organism, the amount of toxin absorbed, and the resistance of the patient. To speak thus is a convenient way of suggesting modes of difference, but we have no actual, or quantitative knowledge of this virulence, this toxin, and this resistance. But we may draw some analogy with what occurs in other pathological fields. We recognize, in the laboratory, that the poisons of some organisms are more virulent than others, and that these poisons become intensified or attenuated by culture. It is therefore not unlikely that when cultural conditions in the mouth change, the toxins produced (which are perhaps as much the result of tissue reaction to organismal growth as secretions by the organism) also change. And of course, new infections may occur.

We may recognize, too, that certain persons appear during life particularly unaffected by toxic and infective agents that are injurious to others, as also that some persons appear more liable, at certain times, to certain forms of malady than at others. We know that biochemical peculiarities sometimes, and what the French call physiological tissue inferiority at others, is suggested as explanatory of these apparent variations and differences in susceptibility. So it may be conveniently said that variations, 1, in *soil* conditions and 2, in *seed* conditions affect the resulting outcome.

The special circumstances of attack and defence must be constantly changing, in accord with internal and external adjustments in whatever terms of virulence, toxin formation, resistance, and the like we find it convenient to summarize what happens.

One word of caution is however necessary. Even though a particular patient may not be conscious of ill health, it is difficult ever to affirm that no slow degenerative process is, in any organ, developing in consequence of the disease process in the mouth. And it can never be affirmed that he who has a septic mouth is in so good trim, as he who has not, to escape the consequences of an accidental exposure to some specific organism or the complications that attend the ordinary acute infectious maladies that are accompanied by nasal, pharyngeal, respiratory and gastrointestinal catarrh. Experience during the late epidemic of influenza convinced me that fatal penumonia occurred with greater frequency amongst those with septic mouths (even when the patients were young and healthy) than amongst those with clean mouths.

On the other hand, we must admit that sometimes the prognostications of both doctor and dentist, in respect of a sick patient with a dirty mouth who refuses treatment, are, in the upshot, apparently unjustified. We may then, of course, say that the patient succeeded in establishing immunity!

But, the practical bearing of this discussion, which may be deemed abstract, is this: the relation to be assumed in any particular case between a state of oral sepsis and of further disease, whilst indicated by the presumption that disease in one part is prejudicial to health in other parts and in the organism as a whole, must be determined, not by the application of any dogma, but by the result of full examination and discussion, by both doctor and dentist, in the light of clinical experience, and in full appreciation of what justice there may be in the possibly opposed views of both.

Treatment depends, in every case, on the relation, spoken of above, that is assumed. The need for careful deliberation is then obvious.

II

But now to discuss the subject in greater detail, and from the point of view, not only of the dental surgeon, but of the bacteriologist, the pathologist and the general physician. Broadly speaking, the dental surgeon, when referring to oral sepsis, has in mind a series of processes or states that may usefully be set out in somewhat formal fashion, as follows:

1. Dental caries
2. Inflammations and infections of the dental pulp
3. Periapical infections, and dental cysts
4. Periodontitis
   - i. Cervical: acute and chronic.
   - ii. Gingival: chronic and acute.
   - iii. General: acute and chronic.

The discussion of the pathology of these conditions, and their distinction, the one from the other, forms no part of the purpose or scope of this paper; nevertheless, it is convenient here to recognize that these dental states fall conveniently into two groups:

1. Septic processes commencing at the gingival margin.

2. Septic processes involving, or culminating in periapical infections.

This grouping of the dental conditions is one that it is important to remember when discussing the subject as it interests the physician.

A bacteriological survey of the position gives us, as it were, a kind of cross reference to the dental classification.

TYPES OF DENTAL SEPSIS

We then recognize three main types—it might almost be said, stages—of dental sepsis.

1. In the first type, or stage, there is obvious disturbance of the normal relations between the ordinary flora of the mouth and the gingival and dental tissues, with proliferation of the common organisms of caries and of fermentation, or putrefaction. Thus, in addition to the ordinary mouth organisms there is an abundance of acid forming and liquefying microbes, among which are found staphylococci, sarcinæ, Bacillus subtilis, Bacillus liquor fluorescens and Bacillus proteus.

2. In the next type, or order, there is the presence of organisms which, though not specific in their effects are yet pathogenic and, in the main, pyogenic. Amongst these are Staphylococcus pyogenes longus, Streptococcus hemolyticus, Micrococcus catarrhalis, and Bacillus coli communis.

3. In the third type we find the added presence of organisms that are definitely associated with what are called specific forms of disease, and are given special names. Amongst these are the pathogenic amebæ, the pathogenic streptothrices (including actinomyces) the Klebs-Löffler bacillus, the tubercle bacillus, Vincent's spironema and the fusiform bacillus.

Thus regarded, the bacteriological situations of oral sepsis remind us irresistibly of what Mégnin has written in *La Faune des Cadavres*. Here an account is given of the successive squads of the workers of death—each squad with its allotted task—that attack, in regular order, the corpse exposed to the air. The analogy must not be pressed too far; the arrangement just suggested is tentative only; but we can still see that the notion of, as it were, accidental and irrelevant infection may have to give place to a conception of a succession of squads of workers of oral sepsis, attacking in order the tissues lowered by debility, or injured by neglect. This notion of workers in squads, too, helps us to realize how it is that specific infections may be truly said to be caused by antecedent and nonspecific infections, and carries with it a practical lesson too obvious to require statement.

To revert, however, for a moment to the grouping of the processes of dental sepsis, as seen by the dental surgeon, it is obvious that, from the point of view of the pathologist, the consequences of oral sepsis depend, not merely upon the bacteriological quality of the sepsis but on the situation of the septic foci.

When, with a gingival periodontitis, there is free discharge into the mouth, the pathological consequences will differ from what occurs when we have to deal with a periapical infection limited perhaps by a reactive osteitis. Stated roughly, from the physician's point of view, the end results of a caries that infects the pulp and leads to periapical reaction are quite other than those of a gingival periodontitis with free discharge, and a granulation barrier in the gum.

It is clear that, when we have to do with "open" sepsis, freely draining into the mouth, there will be surface spread of irritation and inflammation, followed by, 1, ingestion into the stomach and 2, aspiration into the air passages of products of cell disintegration, of fermentation, and of putrefaction together with innumerable microorganisms of one or other squad. On the other hand, when the sepsis is closed or shut off there will be some spread through bone by lymphatic or by vascular channels, of the infecting organisms, and gradual absorption, from the pentup focus of toxic products, with perhaps one day a *sortie en masse* resulting in a septicemia of one kind or another. And this is what we do find happens, in the clinical field, where, however, the two types of sepsis may exist side by side.

We can now see how complicated are the evil possibilities of dental sepsis, and how it is that, in actual practice the consequences are so manifold and so little specific. We see, too, how credulous are those who believe that there are defined limitations to the evil that may be wrought by dental sepsis, and how unscientific is the attitude of mind that leads to loose talk about the "modern craze for attributing all maladies to bad teeth."

The captains of disease and death have other squads under their command than those of the workers of dental sepsis; they have none more efficient, or more active.

DIISEASES CORRELATED WITH ORAL SEPSIS

We may now consider the various diseases and morbid states that we believe are correlated with oral sepsis and may therefore truly be said to be oftentimes caused by it.

Of all these, one—neuralgia major, or *tic douloureux*—stands by itself. Not every case deserving this name can be considered as caused by dental sepsis but, in a certain number of cases, this terrible malady appears to follow the continuance of a chronic periodontitis, or an ascending neuritis from chronic osteitis of tooth sockets (Horsley). Neuralgia minor, on the other hand, when associated with dental disease, is best regarded as symptomatic: that is, as a sign of dental disease.

The diseases and affections commonly consequent to oral sepsis may be conveniently discussed under four headings:

1. Local affections of the mouth and associated parts.
2. Affections of the gastrointestinal tract.
3. Affections of the respiratory tract.
4. General states, and affections of the endocrine, nervous, and other systems, arising from absorption or infection.

Obviously, conditions falling into categories 1, 2 and 3, will in general arise from local spread, from ingestion and from aspiration, while those referred to under 4 will usually be connected with the entry of toxins or of organisms into the lymphatic and vascular channels.

LOCAL AFFECTIONS OF MOUTH AND ASSOCIATED PARTS

To consider first the local affections of the mouth and associated parts. A generally unhealthy state is set up which may spread by direct extension, which may predispose to acute intercurrent maladies, which

may be followed by definite secondary infections, and which may lead to chronic degenerative processes. Various forms of tonsillar and pharyngeal implication thus occur, with sometimes extension to the Eustachian tube and middle ear. Chronic glossitis is set up, and sometimes is followed by cancer. Steno's duct may be infected with sometimes acute, and possibly chronic affection of the parotid gland. Acute cellulitis may involve the tissues beneath the deep cervical fascia (angina Ludovici), and various forms of erysipelas affecting the lips and face arise. Vincent's angina is generally regarded as secondary to gingival infection and, when there is preexistent oral sepsis, the angina of scarlet fever and diphtheria is aggravated. Spread by certain routes leads to infection of the maxillary and other sinuses; sometimes with orbital periostitis and cellulitis. In the latter case, ocular troubles may ensue, but the connection of these with oral sepsis, apart from obvious orbital cellulitis, is well recognized. Lang has elucidated the connection of optic neuritis, retrobulbar neuritis, interstitial keratitis, scleritis, episcleritis, iritis, iridocyclitis (with cataract and glaucoma), choroiditis of different forms, and progressive myopia, with oral sepsis.

Implication of the submaxillary and submental lymphatics, with spread to the cervical glands, and later to those in the mediastinum, may attract attention if acute, and do much damage if chronic.

A simple chronic lymphadenitis from oral sepsis is sometimes followed by tuberculous disease, or by lymphadenoma. The importance of the connection between oral sepsis, chronic lymphadenitis and chronic mediastinitis, leading to pulmonary and cardiac complications I believe to be very great. The association is probably at the bottom of not a few of the chronic degenerative intrathoracic affections.

Absorption into and infection of the blood stream or lymphatics may of course take place at any point in the mouth where there is no efficient tissue barrier, but the consequence of such infection will be more conveniently dealt with later.

AFFECTIONS OF GASTROINTESTINAL SYSTEM

Passing to the gastrointestinal system, we note, first, the hindrance to efficient digestion that arises from the conveyance of septic filth and cellular débris with organisms of all kinds, into the stomach itself. Vital and chemical activity is hampered and, first, the stomach walls, later those of other stretches of alimentary canal, become catarrhal, inflamed, and perhaps atrophied. Clinically, we recognize various types of septic or fermentative dyspepsia as associated with gastric dilatation. Acute ulcer is probably often a result of the septic infection of a small, or microscopic trauma; chronic ulcer is aggravated by gastric sepsis. Not only duodenal ulcer, but duodenal catarrh, is related to oral sepsis, and, once the duodenum is unhealthy, the gall vessels and liver become easily involved, leading to gallstones, and various infective and degenerative conditions. The liver, like the thyroid and other organs, has a definite part to play in defence against toxins and microorganisms. We cannot forget this in considering the causes of functional failure and organic change in these organs.

It is practically certain that some forms of acute and chronic pancreatitis are the result of ascending infection of the pancreatic ducts. So perhaps we have one explanation of the constant association, with diabetes, of oral sepsis. Except in children, diabetes is rarely seen in persons who have clean mouths.

Chronic enteritis is often an extension of what is present in the stomach and duodenum; the appendix is a lymphatic accessory of the bowel, in effect, and is affected by what affects it. There is no doubt of the close association of many forms of colitis with oral sepsis. Here the clinical evidence is very strong except, of course, in respect of the purely nervous cases.

A remarkable fact is that anal piles and other affections are often associated with oral sepsis, and this may be diversely explained.

Experience at St. Mark's Hospital led me to believe that persons who have a vulnerable stomodeum have a no less vulnerable proctodeum, and so possibly this apparent "sympathy" of distant parts has a biological connotation.

That cancer supervenes in tired tissues the subject of long continued irritation must not be forgotten when we seek into its remoter antecedents, while constipation, in some of its severer as well as its milder forms, is sometimes the result of a neuromuscular debility that is in part the consequence of long continued poisoning or tissue infection by septic organisms.

Whilst there has been, on the part of many, very full admission of the part played by oral sepsis in the production of disease of the alimentary system, recognition of its relation with disease of the respiratory system has been less full. Certainly, disease of the respiratory system, more frequently than disease of the alimentary system, is connected with sepsis of the nose and adnexa.

AFFECTIONS OF RESPIRATORY TRACT

But still, oral sepsis has much to do with respiratory disease. The route to the lungs, via the cervical lymphatics, the mediastinal glands, and the pleural spaces has been already pointed out. There is also the direct route, followed by aspirated material, especially when mouth breathing continues during sleep.

Certainly the dangers of oral sepsis, quâ the respiratory system are much greater in those who are already the subjects of nasal obstruction, of asthma, and the like; so much must be admitted. Under these circumstances, chronic laryngitis, bronchitis, and bronchiolitis may become established, entailing bronchiectasis and other chronic conditions, as well as the liability to acute intercurrent maladies.

A special liability to respiratory complication affects those who submit to surgical operation requiring oral administration of anesthesia while suffering oral sepsis to continue, and those surgeons lose most patients who neglect to assure themselves of the mouth condition before operating.

Even if we disallow the influence of oral sepsis in paving the way for infection by the Bacillus tuberculosis we cannot deny that fatal tuberculosis of the lungs is frequently the result of a mixed infection, in which streptococci from the mouth are accomplices, while pulmonary strepthricosis seems to be definitely a gum infection at first. Gangrene of the lungs, and septic or putrid bronchitis, are secondary lung conditions often associated with oral sepsis.

GENERALIZED BLOOD INFECTION

The results of generalized blood infection cover almost too wide a field for easy exploration. But we must recognize, in the first place, a more or less definite form of debility with malnutrition, simple anemia, and slight fever, that is a result of oral sepsis. In other cases certain socalled cryptic forms of septicemia and pyemia are dental in origin. The grave form known as malignant, septic or ulcerative endocarditis is certainly sometimes due to blood infection from the teeth and gums.

Since the work of Hunter some twenty years ago increasing attention has been given to oral sepsis in connection with grave anemia. We now distinguish, 1, simple secondary anemia, associated with oral sepsis; 2, grave septic anemia, certainly due to mouth infection, and 3, hemolytic (pernicious) anemia with glossitis also, but less definitely or directly, associated with oral sepsis.

In connection with these blood states we may speak in general terms of various degenerative conditions of the heart walls and of the bloodvessels, as well as with toxic neuroses of the heart, and other organs.

These toxic blood states may also be invoked to explain, and probably with reason, in part at least, certain neuroses and psychoses of central origin, as well as some forms of neuritis. The fact that certain degenerative diseases of the spinal cord are associated with severe anemias has led to consideration of the influence of oral sepsis on cord and nerve degeneration.

Among the disorders of metabolism that seem connected with oral sepsis, gout seems to hold a place, though in this respect its influence is perhaps only indirect.

MYXEDEMA

Other affections require mention: among them myxedema is prominent. Myxedema sometimes represents a failure of the thyroid to cope with the calls upon it by way of defence against poisons and infections. Since oral sepsis is one of the commonest of infections we can see how sometimes it exhausts the thyroid, and why it is that thyroid deficiency is so often an accompaniment of arthritis.

JOINT AFFECTIONS

The joint troubles consequent to oral sepsis are oftentimes very serious. In acute rheumatism it may be that the infection we believe to be present occurs by way of the mouth; in some other joint affections it certainly does. We may distinguish, 1, the obvious septic arthritis; 2, rheumatoid arthritis and 3, osteoarthritis. It is with the two last that we are now most concerned.

Rheumatoid arthritis occurs in several clinical forms, but it is rarely that some septic focus, some source of chronic infection cannot be discovered. Very frequently this is in the mouth. In osteoarthritis, mouth infection is often present but the beneficial results of dental treatment, though important, are less happy than is often the case in rheumatoid arthritis. A rough distinction between rheumatoid arthritis and osteoarthritis may be made in saying that the former affection is generaly polyarticular, and involves small joints with marked periarticular changes while, in osteoarthritis, one or more large joints are implicated and there is bony and cartilaginous change). Rheumatoid arthritis is often more purely septic than is osteoarthritis, in its origin; the latter malady is often connected with mechanical stresses, static or traumatic. Fibrosis in the region of joints is frequently toxic or septic in origin.

Whilst it is true that some, nay, many, of these joint affections are properly traceable to oral sepsis, it must be frankly admitted that the hope of cure sometimes held out, if wholesale extraction be permitted, is really not justified. It is right to cut off the further supply of sepsis; but, too often, irreparable damage has been done to the joints before dental treatment is carried out. It seems too sometimes as if these joints act as what the French call *abcés de fixation,* and so the patient secures immunity at the expense of crippled joints. Certainly, joints seem to play a part in defence reactions; the joint troubles of serum sickness will at once recur to the mind.

WIDESPREAD INFLUENCE OF ORAL SEPSIS

One word more must be added. The influence of oral sepsis in the production of disease is not limited to its subject.

Mr. Pierrepont (4), in particular, has shown that maternal oral sepsis sometimes exerts a most prejudicial effect on the fetus and on the nursling. Lactation may be gravely interfered with, and even when the mother does not suckle her child she may infect, from her mouth, the comforter or the bottle teat. Again, it is evident that no wet nurse should be selected whose mouth is not above suspicion.

CONCLUSION

Looking back over the whole ground thus cursorily covered it is clear that, on the one hand, as already said, it is impossible to impose any definite limit to the mischief we may properly ascribe to oral sepsis under certain conditions. On the other hand the zeal of doctor or dentist must never allow him to say, 1, that because such and such a condition is present there must be oral sepsis, or 2, that because oral sepsis is present this patient must either be ill now or in the near future. Again, it must not be said that, because oral sepsis and some other condition is present that the conjunction of the two is reason for all. There may be some other focus of infection, some other factor present. Complete examination and the fullest consideration of all relevant circumstances are necessary.

In face of such difficulties as do arise in connection with this subject, the practitioner will do well to think in terms of sick persons, rather than in terms of diseases. Textbook descriptions are necessary and are helpful, but, in practice, we deal primarily with particular persons.

Scientific practice is guided by *reasoning* based upon *experience* and *observation;* it is not based upon adhesion to authority; that leads to dogma. Nor is it based upon mere observation; observation and experience, without reasoning, constitute mere empiricism.

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Pneumonia During the Past Ten Years*

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Observations presented in this paper are from personal experience on the pediatric service of the Lenox Hill Hospital, New York, from January, 1915, to May, 1925. During this period there have been 495 cases of pneumonia, of which 249 were lobar pneumonia and 225 were bronchopneumonia. The number of deaths was forty-nine, a total mortality of 9.9 per cent., which is considerably lower than the usual reports from hospital services. These cases of pneumonia do not include any patients that were in the hospital less than twenty-four hours or any cases from the contagious service. In twenty-one cases in which the histories were incomplete, the exact type of pneumonia could not be determined. The greater number of patients came from the middle and poorer classes in the immediate vicinity of the hospital. The ages varied from a few months to thirteen years, and the number of males was slightly in excess of the females.

The majority of these children admitted to the hospital had high temperature and rapid pulse rate ranging from 130 to 140, being rarely out of proportion to the markedly increased respirations, which ranged from 40 to 60. In this series of cases, in which digitalis was instituted early, we never observed the sudden drop in pulse or the cardiac collapse which is frequently present at the crisis. The pulse rate continues regular, always slightly lower, and gradually comes down to normal. The respirations are markedly increased and appear on the chart as a line always above the temperature curve, remaining there until the termination of the illness. Active movement of the alæ nasi associated with labored breathing, ending in typical pneumonic grunts, is the familiar clinical picture. With each respiration there may be intense pain caused by the inflamed pleura covering the lung rubbing against the chest wall. If this condition is present, the pain continues for a few days until there has been an accumulation of fluid between the two layers of the pleura, which prevents any friction from taking place with respiration. In the uncomplicated lobar pneumonia the temperature remains high, varying from 103.5° to 104.5° F., with very little change until the time of crisis, when it may drop to 99° or below normal.

In bronchopneumonia of the influenzal type there are very wide excursions of temperature which go up and down from 101° to 105° F. throughout the entire course of the illness. In most cases of lobar pneumonia the temperature drops two or three degrees on the day before the crisis, but within a few hours it rebounds to 104° to 105° F. This is called the precritical drop and is followed the next day by the real crisis, which in this series occurred from the fifth to the seventh day, when the temperature remains normal with the convalescence of the patient.

*From the Lenox Hill Hospital, A. Jacobi Division for Children, Dr. A. L. Goodman, director. Read before the Section on Diseases of Children of the American Medical Association, Atlantic City, N. J., May, 1925.

In lobar pneumonia the right upper lobe was more commonly diseased than any other portion of the lung, although any other part may become affected. Patients with bronchopneumonia were affected with the influenzal type and were more acutely ill than those with lobar pneumonia. The more serious cases occurred in both forms of pneumonia when there was inflammation of the apex alone. This is probably due to the fact that absorption takes place more easily into the general circulation, with the development of more general toxemia, when the apex is involved than when the base is involved. Certainly the type of infecting organism determines the severity of the toxemia and the prognosis of the case. However, patients with low temperature may manifest symptoms which are more severe than those of patients with considerably higher temperature.

LABORATORY EXAMINATIONS

Laboratory tests, especially the examination of the blood, aid in determining the type of infection and prognosis of the case. The presence of a high leucocyte count may indicate a more marked resistance to infection. In lobar pneumonia the leucocytes may be as high as 50,000, with polymorphonuclears of ninety per cent. A low leucocyte count with not more than fifty per cent. of polymorphonuclears indicates a lessened resistance and is always found in influenzal pneumonia. Daily blood examinations should be made in all acutely ill children, especially when complications arise. In my series of cases, the highest number of white blood cells was 55,000 and the lowest number was 8,000. Cultures were taken from the blood in a small number of cases, but in no instance was an organism obtained nor was this test of any assistance in confirming a diagnosis.

Throughout the entire course of the illness, complete urine examinations should be made daily for the detection of nephritis. At the beginning of the disease there may be faint traces of albumin with casts, caused by the fever; if this persists it may develop into a severe nephritis and cause as much anxiety as the pneumonia. Of equal importance to the examination of the urine is the daily measuring of the fluid intake and the quantity of urine excreted in twenty-four hours. During the height of the disease there may be a small amount of concentrated urine due to the lessened fluid intake and the retention of fluids in the body. Of numerous chemical examinations of the blood made during the course of acute nephritis in pneumonia, only slight chemical changes were found. This was of little value in the prognosis, as the figures varied slightly from the normal.

In the typing of sputum for organisms, the largest percentage of specimens contained bacteria which came under Group 4, for which there is no serum. It has been so difficult to obtain a sufficient quantity of sputum from small children that grouping has been scarcely worth while.

RÖNTGENOGRAPHIC EXAMINATIONS

In hospital work in which röntgen ray examinations are available the chest should be röntgenographed in all cases. This is of great assistance in the presence of a doubtful diagnosis, especially when there may be a question of pneumonia or appendicitis. Without physical signs, except dullness, the röntgen ray may confirm the diagnosis. It has been my experience that if daily pictures are taken the preliminary shadow which appears on the surface of the lung gradually increases in size until it assumes somewhat the shape of a wedge, the base of which is on the surface of the lung and the apex extends inward until it comes in contact with a large bronchial tree. This is just the reverse picture to that which one sees in embolism of the lung. The slow development in the shape of the area of consolidation accounts for the frequent delay in hearing the bronchial breathing. The bronchial breathing is not transmitted through the diseased lung until the apex of the triangle has extended to one of the bronchial trees. In the majority of cases there were more or less distinct markings which were reported as pneumonia. In a small number of cases in which a definite diagnosis could be made by physical examination the röntgenogram was negative. The difficulty that sometimes arises in cases of suspected pleurisy or empyema as to the presence of fluid may be demonstrated successfully by the röntgen ray. The type of shadow cast by the fluid in the pleural cavity depends on the quantity and density of the fluid present. In simple pleural effusion the shadow may be very slight, while in empyema the shadow indicating fluid may merge with the consolidated portion of the lung, rendering it difficult to differentiate between the extent of the fluid and the extent of the consolidation.

COMPLICATIONS

The most common complications that occurred during the course of the disease were otitis media, pleurisy, empyema, myocarditis and nephritis. In this series there were comparatively few cases of otitis media. The ears should be examined every day during the height of the pneumonia for development of middle ear disease, such as redness and distinct bulging of the drum. If this occurs, two courses are open: 1, to allow the drum to rupture spontaneously; 2, to incise the drum early for the evacuation of pus. The latter course is considered the more favorable as it lessens the amount of inflammation and relieves the pressure of the confined fluid.

In almost every case of pneumonia there is a small amount of pleural effusion at the site of the pneumonia. This, an inflammatory reaction, is due to the two inflamed surfaces of the pleura coming in direct contact. Fluid is usually determined by physical examination, the röntgen ray and chest tapping. The physical signs that are commonly present are flatness, loss of tactile fremitus, and diminution of the breath and voice sounds. The early pleural effusion that occurs is not of any serious consequence when the fluid remains clear and is not too extensive, as it is quickly absorbed after the temperature has come down to normal. However, thirty-five cases had a sufficient amount of fluid to interfere with respiration and were classified as pleurisy with effusion. Twenty-six of these patients developed empyema; five died. In children the physical signs of fluid differ from those in adults; fluid creeps up the lateral chest wall, making a distinct parallel line to the lung and not parallel to the diaphragm as in adults. This may be demonstrated by the röntgenogram. When the pleural cavity becomes so filled with fluid as to embarrass the respiration or displace the heart, the fluid should be aspirated with the Potain negative pressure apparatus, never taking off more than one half of the estimated fluid present as the too rapid removal of fluid from the pleural cavity may produce pleural shock, edema of lungs and collapse. The remaining fluid may be aspirated within a few days. The point of aspiration should be wherever the signs are present or at the classic angle of the scapula. Simple puncture for the removal of fluid sometimes hastens the absorption; another method that may be advised is the subcutaneous injection of ten c.c. of sterile pleural fluid. Cultures of all aspirated fluid should be taken to determine the type of organism, as this decides the procedure to be followed should empyema develop. If the aspirated fluid is cloudy and contains pus with organisms, the case should be considered as one of empyema.

In this series of cases the most common organism was the pneumococcus, the next the streptococcus, and then the staphylococcus. If the pneumococcus is the organism recovered, there is no immediate necessity for draining the pleural cavity; but if the streptococcus or staphylococcus is present, surgical intervention is urgent, as infections with these organisms are more severe and are more likely to produce general sepsis. In the former the fluid usually becomes very thick with the formation of fibrin and adhesions, whereas in the latter the fluid may become cloudy with very little fibrin or adhesions. From the surgical viewpoint the type of organism present is of paramount importance, as most surgeons determine their surgical procedure on this point. It has been found best to delay opening the chest, especially in pneumococcus infection, until the fluid becomes very thick; this permits adhesions to form and prevents early collapse of the lung. An empyema operation should never be performed at the height of the pneumonia, but should be delayed so as to permit the pneumonia to subside completely and the patient's general condition to improve, except, as stated above, when the streptococcus is the invading organism. Early operations in cases of empyema have a high mortality due to the following causes: severity of the infection, collapse of lung with circulatory disturbances in the mediastinum, and diminished area for breathing on opposite side.

The three following methods for the treatment of empyema are in common surgical usage at the present time: 1, simple aspiration; 2, closed method (suction drainage of cloudy fluid), and 3, open method (resection of rib). The closed method often gives ample drainage to empty completely the empyema cavity, or this may be used as a preliminary step to the open method, allowing the patient more fully to overcome his toxemia. With the open method, Dakin tubes may be inserted into the pleural cavity for complete flushing and sterilization.

Early in the disease, distinct signs of myocarditis may develop, which are manifested by weakening of the heart sounds, rapid feeble pulse, and disturbed circulation, characterized by blueness of the lips and clammy, cold extremities. This condition is caused by two things—toxemia and the unaccustomed strenuous burden that is thrown on the heart during the pneumonia. The myocarditis, if severe, may be one of the causes of death at the time of crisis, and indicates the necessity of stimulation from the very onset of the disease. After the temperature has been normal for a few days, the heart sounds markedly improve with a gradual disappearance of all signs of myocardial involvement.

Another complication that must be guarded against is the possible development of nephritis. This does not ordinarily occur, but when it does it may be of serious consequence and cause permanent injury to the kidney. The daily measuring of the amount of urine excreted is an important guide in determining the amount of kidney function. The quantity of urine excreted should be about equal to the fluid intake. In my experience, with proper treatment and careful watching, even a severe nephritis may be bridged over to a complete recovery.

TREATMENT

The treatment that we have followed for the last ten years has consisted of proper hygienic surroundings, fresh air, efficient nursing, sponge baths, proper diet, and medication. Whether in the home or in the hospital, children with pneumonia should be isolated throughout the entire course of the illness, except when there are several children in the same stage of pneumonia. Even these children should be separated by glass partitions or screens to prevent bedside infection. Each room should be well ventilated with cool fresh air at a temperature not below 50° F. Some years ago the use of cold air was urged as a form of treatment in pneumonia, as this was helpful in raising the blood pressure. We have never found the use of icy cold air of any benefit, but on the contrary somewhat of a detriment, especially in weak, exhausted children, acting more as a depressant rather than a stimulant. Our experience has been that the best results in regard to ventilation are obtained with an even temperature of from 50° to 60° F., with no sudden changes from heat to cold. Whenever there is high temperature, regular sponge baths every three hours with water at a temperature of 100° F., combined with an ice bag to the head and a hot water bag to the feet, reduce the fever from one to two degrees and allay much of the restlessness and delirium. These measures tend to lower the temperature, and we have never found drugs necessary. The daily use of a five per cent. solution of sodium bicarbonate as a rectal irrigation assisted by mild cathartics from above relieves much of the extreme toxemia and restlessness. A liberal amount of forced feeding should be persisted in, such as, milk, eggnogs, white of egg with orange juice, cocoa, thin cereals, and purée of creamed soups. Nourishment should be given at regular intervals with the insistence of cooling fluids in between the feedings to obtain further elimination of toxemia.

All forms of medical treatment have been suggested in pneumonia. We have found that the early use of stimulation from the very onset of the disease with such preparations as digitalis, camphor and caffein sustains a weakened heart muscle and greatly lessens the mortality. These drugs should be used in large enough doses at regular intervals to produce a full physiologic effect—small doses are useless. From the beginning of the illness, during the first forty-eight hours, even in young children, we give one drop of the tincture of digitalis for every pound of body weight. This may be divided into regular doses to be given at fixed times. For example, a child weighing twenty pounds would receive two drops of digitalis five times during the first day and two drops five times during the second day. This would make a total of twenty drops during the first forty-eight hours; after that the dose may be reduced, depending on the patient's condition, to one half the amount in twenty-four hours until after the crisis. In each case the quantity of digitalis should be individualized according to the response and effect on the pulse. In older children the fluidextract may be given in one to two minim doses four times a day. It is not as beneficial nor is it as well tolerated by the stomach as the tincture. In extremely toxic cases with very rapid heart action the hypodermic use of digitalis, preferably in the form of digifolin, produces a rapid digitalizing effect without any irritation to the stomach or inconvenience to the child. It may be used when there is vomiting or when there is difficulty in giving the child fluids or medication.

Whenever digitalis treatment is instituted, the pulse rate should be carefully watched for any sudden changes or any marked slowing of the pulse. One is often surprised at the large doses of digitalis that may be given without disturbing the patient. A very safe rule for the use of digitalis is the one given above, and in our experience it has proved beneficial in a large number of cases.

As a second stimulant and support to the heart, camphor in one of two forms may be used: 1. The camphor emulsion made according to the following formula; monobromated camphor, two gm.; mucilage of acacia, eight c.c.; olive oil, eight c.c., and sufficient water to make 120 c.c.. This has proved an excellent stimulant and is fairly well tolerated by the stomach. 2. In the presence of vomiting or any difficulty in giving medication, a twenty per cent. solution of camphor in oil of sweet almond is used hypodermically. There is no definite dose for camphor; it may vary from one to three gr., depending on the age and weight of the child. It should always be used in conjunction with digitalis, as it seems to have some decided effect on the pneumonia and is also an excellent expectorant.

When a rapid stimulant is desired, before the digitalis has begun to act, caffeine sodiobenzoate in from one to two gr. doses given hypodermically acts very rapidly, but it is not as desirable as digitalis or camphor. The objection to its use is the marked restlessness and irritability of the patient after it is given. It has been our practice in all cases of marked delirium and extreme toxemia, especially when there is very high temperature, to use medium sized doses of whisky well diluted in water. This applies to cases in which there is marked sepsis.

While I know that whisky is condemned by a large majority, it certainly has been of great benefit in our treatment of pneumonia. All these drugs should be continued throughout the entire course of the disease and not discontinued until the temperature has been normal for at least twenty-four hours. Regardless of which stimulant is used, one should always give it early in full doses at regular intervals until after the crisis. From my experience and observation in the treatment of pneumonia in infants and young children during the last ten years I cannot help but feel that during a period of continued high temperature with marked toxemia, an injured heart is better supported and better able to withstand the strain when stimulation is begun early and continued in sufficient quantity throughout the entire course of the illness.

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The Prevention of Scarlet Fever*

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An intelligent prevention of an infectious disease, as well as its treatment, must depend on definite knowledge of its cause. The cause is a living microscopic agent, which differs for the different diseases, but usually belongs to the group of organisms known as bacteria. These bacteria usually invade the host in which they produce disease through some very definite portal of entrance. For our purpose we will consider only those microorganisms which gain entrance through the nose and mouth and find lodgment in the upper respiratory passages. Such bacteria are most commonly transferred from person to person through the medium of droplet spray of the upper respiratory secretions scattered broadcast by the infected individual in acts of sneezing, coughing or talking, and are breathed in by the next individual in whom they are to produce disease. One may call this direct aerocontact transmission. Upon implantation on the surface of the membranes lining the nose and throat the first requisite in the production of disease is the ability of the virus to reproduce and multiply in this location; the next is its ability to invade the tissues. This property of invasion is spoken of as virulence of the microorganism and differs for different bacteria. Immediately the microorganism begins to invade the tissues the body defences against such invasion are called into play. If these body defences are successful in resisting the invasion of the microorganism, its implantation in that particular individual is incidental and passes unnoticed because no noteworthy symptoms are produced. If, however, the body defences are not prepared to combat successfully the invasion of the microorganism, serious manifestations of such invasion result. Some types of bacteria are aided in their attack upon man by a property which they possess upon growth of producing a powerful poison or toxin which paralyzes the individual's forces of resistance to the invasion. Some persons have already in their blood antitoxin which serves to neutralize this toxin of the bacteria. In these persons the invasion of the bacteria is successfully resisted, and the person is spoken of as immune to the infection. Those who do not have this antitoxin are spoken of as susceptible to the infection.

Some bacteria which produce these toxins when they grow naturally in our tissues, may be grown artificially in the test tube under conditions whereby they produce the same toxin. Given such a toxin in the test tube for a particular disease, we can use it for three purposes in combating the disease. First, we can inject minute amounts into the skin of normal individuals and obtain definite knowledge from the nature of the trifling local reaction which follows as to whether the person is or is not susceptible to the disease in question. Second, after having determined in a group of persons, those who are susceptible to the disease, we can by using injections of larger amounts of the toxin excite the production of antitoxins in the blood of such persons so that they are no longer susceptible to the particular disease. Third, we can inject animals with repeated doses of the toxin and obtain in the blood serum high concentrations of antitoxin. The serum from such animals can then be preserved and used in neutralizing the toxins which happen to be producing serious acute illness in a given individual.

Bearing these general principles in mind, let us consider more specifically how they apply to scarlet fever. It appears obvious that their application must depend first of all upon knowledge of the specific bacterium causing scarlet fever. This has been the riddle of scarlet fever which was solved only recently. Scarlet fever was known to the medical profession for many years before the era of bacteriology made it possible to search for a specific microorganism as its causative agent. The first unmistakable account of scarlet fever was by Daniel Sennet of Wittenberg (about 1625), but it was Sydenham in 1675 who gave the first full account of the disease under the name *febris scarlatina*. Common in Europe during the eighteenth century, it appeared in North America, according to Craigen in 1735, spreading throughout New England, thence to New York in 1746. With the beginning of the era of bacteriology in the nineteenth century, interest was aroused in a search for the causative bacterial agent. Certain bacteria (streptococci) were associated with the sore throat of scarlet fever almost from the first. Streptococci were, however, found in association with many other abnormal conditions not at all akin to scarlet fever. Therefore confusion arose, and since it was not then appreciated that there are many kinds of streptococci, all resembling one another closely, it came to be doubted whether the streptococci actually found were the real primary causative agents in scar-

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let fever, or whether they were simply concomitant agents causing certain of the complications of the disease, but not actually instituting the disease itself.

A ray of light was shed upon the real cause of scarlet fever in 1902, when Moser and von Pirquet, using streptococci isolated from patients with scarlet fever, prepared in animals a serum which in their hands yielded hopeful results in the treatment of scarlet fever. There can be little doubt that the nature of the disease was almost discovered at this time. Several other workers confirmed these good results with serum, but shortly a number of others failed with serums prepared after the method of Moser, so that after a period the matter of a specific action of a streptococcus serum in curing scarlet fever was dropped.

The idea of a filterable virus (i. e., an organism too small to be seen by the ordinary microscope) came to be more or less popular as an explanation of the causative factor in scarlet fever.

The next important contribution bearing on the cause of scarlet fever was made by Miss Tunnicliff in Chicago in 1902, when by complicated laboratory procedures she showed that the streptococci occurring so constantly in the throats of patients with scarlet fever constituted a particular group, and that the members of this group while similar one to another differed from the streptococci derived from sources other than scarlet fever. She showed further that patients with scarlet fever early in the course of the disease possessed little power to fight off infection with this particular streptococcus, but that during convalescence they possessed this power to a greater degree than normal individuals. This important contribution did not at the time receive the attention which it deserved, largely due to our heritage of misconception in regard to the cause of scarlet fever. In 1918 the observation was made that convalescent serum possessed the property of blanching the rash of scarlet fever in a local area about the site of an injection of it into the skin. (The Schultz-Carlton phenomenon.)

From this on the work which has led to our present conception, and what is without doubt the true conception of the nature of scarlet fever, culminated rapidly. Two groups of workers were concerned in bringing about the solution of the riddle of scarlet fever. The eastern group composed of Dochez, Avery, Lancefield, Bliss, Sherman, Blake and the midwestern group, George and Gladys Dick working in Chicago.

The contributions of the former group consisted of the development of better methods for differentiating different strains, the confirmation by this method of the occurrence of a particular variety of streptococci in scarlet fever patients, the development of a specific serum for treating patients suffering from scarlet fever, and the demonstration of the curative effects of this serum in the treatment of such patients.

The work of the Dicks stands out as epoch making because of two things. First, they appreciated the fact that the real reason for lack of progress in the solution of the problem was the lack of susceptibility of experimental animals to inoculations with scarlet fever. They therefore departed from the beaten course in experimental work and used humans for inoculation purposes. In doing this they were the first to show that the streptococcus from scarlet fever patients produced this disease when inoculated into susceptible humans. Secondly, they produced in the test tube the toxin elaborated by these streptococci, and with this toxin once in hand they developed a skin test enabling one to pick out susceptible persons from those not susceptible to scarlet fever; they produced symptoms resembling those of scarlet fever by the injection of proper doses of this toxin alone; they were able to show that susceptible individuals can be rendered nonsusceptible by the use of injections of this toxin; and that an antitoxin could be prepared in the blood of animals which could then be used in neutralizing the toxins causing the acute attack of scarlet fever.

The present conception of scarlet fever then is that it is caused by a streptococcus growing usually primarily in the throat, where soluble toxins are produced and diffuse outward to give rise to grave general symptoms. The complications and sequellæ are partly due to residual effects of the grave toxemia and partly due to invasion and local development of the bacteria in points adjacent or far removed from the initial site of the infection in the throat.

Barring complications of the latter type the streptococci disappear rather rapidly from the throat in most instances. If they invade the accessory sinuses, the middle ear, the glands of the neck, and other parts, the organisms persist for long periods. In fact such individuals may become permanent carriers of these bacteria and at any time serve as the medium for infecting others. Persons who are immune to scarlet fever may when in contact with acute cases of the disease for a time harbor these organisms in their throats presenting either no local symptoms or only mild local signs of inflammation. (These may be called contact carriers.)

The acute carrier (i. e., the patient with scarlet fever) is the chief source of danger in the spread of the disease, the permanent carrier and the contact carriers are the other sources of danger, chiefly important because they frequently go unrecognized and thus serve in maintaining the endemic characters of the disease.

This rapid transfer from susceptible individual to susceptible person is important in that it seems to increase the virulence of the organism. It may, in large part, account for the great variations noted in the severity of different epidemics of scarlet fever.

In the prevention of such a disease as scarlet fever there are two general plans of attack: First includes measures taken to prevent the spreading of the causative agent; and second, includes measures taken to render susceptible persons nonsusceptible to the disease.

The first has heretofore failed to eradicate the disease although it has been to a certain extent instrumental in controlling epidemics. Greater success with these methods is not likely to eradicate the disease even now with our better understanding of the nature of the causative agent.

The logical point of attack, where failure to control the spread of the streptococcus is admitted, is that of rendering susceptible persons immune to the infection. Many persons are naturally immune and therefore need no treatment.

The skin test made with the toxin of the strepto-

coccus of scarlet fever, known as the Dick test, enables the identification of those who are likely to be attacked by the disease given the opportunity for contact with it. This class of individuals varies from roughly twenty per cent. to eighty per cent. of given groups, varying widely with the age, and the opportunities for previous exposure to the disease. Children show higher percentages of susceptibles than do adults; children of the well to do higher percentages than children of the poorer classes.

Having determined susceptibles, these are rendered immune by the injection of graduated doses of the toxin, beginning with not more than one hundred times the dose employed for the skin test for the first dose; repeating with two and one half times this dose after a week; and giving still a third dose of from two and one half to five times the first amount used.

Now you will naturally ask, is not all this so new that it is really yet in the experimental stage? Yes and no.

The Dick test followed by immunization of those shown to be susceptible has been practiced upon thousands of individuals notably by Zingher in New York. Both procedures have been shown to be reliable and efficient. Naturally it may be expected that the present practice in the application of these principles does not represent final perfection. Difficulties are to be expected in any complicated biological procedure. One outstanding difficulty in this procedure is the matter of accurately measuring the strength of the toxin in the products to be used. At present the strength of the toxin is measured in terms of the amount that will produce a certain type of reaction when injected into the skin of known susceptible individual, volunteering for this purpose. It is obvious that this does not permit of as accurate an estimation as would be desired. We need to know more about technical matters in the production of this toxin. Again it must be expected that considerations other than enthusiasm for the prevention of scarlet fever may place on the market inferior products for this work. The public is protected in such matters by certain standards imposed by Federal law and there is little doubt that adequate supplies of reliable products will soon be available.

The big task which faces those interested in preventive medicine in this matter is the application of these methods in communities of persons. The discovery of a law or of principles beneficial to a community does not in itself benefit the community. It is the application which benefits.

Some one has said, that one of the difficulties with constitutional government is—"that governments move on, while constitutions stand still." More and more in these days of preventive medicine do we find its progress hampered by our code of medical ethics, which has not been revised to meet the needs of preventive medicine. Preventive medicine needs ways and means to parade its stock in trade before the public eye. Medical societies should take a lesson from modern business corporations. The radio business was not built up so quickly to present proportions through public meetings and personal appeal. Certainly people desire health more than they long for a radio apparatus, if they are only made to realize it. They can be made to realize it by the use of proper appeal from medical societies through the medium of the press. This appeal should give definite instruction in the benefits from the practice of these principles; should show the failures of methods formerly practised; should specifically direct persons to their family physicians; should give them an idea of the relative insignificance of subjecting themselves to the procedures; and give some approximation of the expense involved. Most important of all such appeals should be repeated daily for long periods and properly placed in the advertising columns of the newspapers.

The educational program which has been employed in connection with diphtheria prevention should aid in this program for prevention of scarlet fever. The methods of arousing interest in both of these important procedures should, however, be changed, especially since those employed in the diphtheria work cannot be called highly efficient.

Congenital Diaphragmatic Hernia with Complete Rotation of Stomach

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Although medical literature abounds in diaphragmatic hernias, many of which have been reported in recent years, the diagnosis in many instances has been made by the röntgen ray examination. As far as we can ascertain, this report represents the first case on record of congenital diaphragmatic hernia with a complete rotation of the stomach.

Case.—Mr. H. H., aged twenty-two, American, of Jewish parentage, single, a shoe salesman, was referred to me on May 18, 1924.

Family history.—Father living and suffering from gastrointestinal disturbances. Mother living, troubled with hyperthyroidism. Family negative to tuberculosis, cancer, and cardiorenal disorders.

Past history.—Patient weighed five and a half pounds at birth. He was breast fed for a short time. There was considerable gastrointestinal trouble following the establishment of artificial feeding. On two occasions he had convulsions which were considered the results of gastric disturbances. He was a delicate baby, undernourished, and very irritable, always suffering from constipation. He had had measles at the age of two; pertussis and pleurisy with effusion on the left side at the age of seven, and infantile eczema of an annoying condition from the ages of six to nine.

The patient's appetite was variable; at times he was extremely hungry, and at other times he was

FIG. 1.—Diaphragmatic hernia, with colon in left thorax.

FIG. 2.—Showing complete rotation of stomach.

nauseated by the sight of food. He noticed that he could not digest meat, rye bread, and starchy foods. From the ages of fourteen to seventeen he enjoyed good health, though he was always underweight. At the age of seventeen, patient complained of severe constipation, nausea, belching, fatigue after meals, fullness and distress in the stomach, and pain in the lower abdomen. His appetite was poor, and he had headaches localized in the central portion of the head.

Present illness.—The patient dates his present difficulty to five years back when, serving as a salesman, he suddenly became dizzy, and felt sharp pains in the abdomen. Increasing pain in the abdomen necessitated calling a physician. His pain could not be localized. He felt "that the entire abdomen tears to pieces and pulls 'way down, almost to the bladder." From that day the patient had heartburn after each meal, accompanied by nausea and dizziness. He was compelled to use sodium bicarbonate in large doses "to make the belching easier and more frequent." Laxatives did not have any effect upon him, which necessitated the use of strong cathartics. He became alarmed when he noticed a big lump in the lower abdomen which, to him, seemed to be an enormous growth.

Physical examination.—The patient was undernourished, of tall stature and poor posture. The shoulders were bent and the sternum sunken. His height was five feet eight and a half inches, and his weight 122 pounds. The skin was pale, rough, and mottled. The hands and feet were livid and cold to the touch. There were numerous small moles over the right side of the face. Ears, nose and throat were negative. The tongue projected in midline and was much furred. The tonsils were small and injected; thyroid not enlarged; other glands not palpable. Chest expansion was poor, especially over the left side. On percussion, there was marked tympanites on the left side of the chest, especially from the third to the sixth rib. Heart was normal in size and position. On auscultation, many sonorous râles could be heard on left side of the chest, and fine crepitant râles at the end of full inspiration. No murmurs could be detected in the heart sounds. The abdominal wall was sunken, and the muscles of the abdomen flabby. The liver was enlarged and the edges palpable. There were exaggerated peristaltic movements attended with gurgling sounds in the left lumbar region. The ascending colon could not be palpated. The small intestines, upon palpation, presented themselves as a mass. Gaseous fremitus could be easily detected. In the right iliac fossa, there was found a large soft mass which was not painful under pressure. The mass could be moved up or down, with no discomfort to the patient. Upon standing, the mass fell low and more to the right. The abdominal, knee, and arm reflexes were exaggerated.

Laboratory examination.—Specific gravity of urine, 1010; reaction acid; albumen, 3+; phosphate and indican, 4+; other chemical reactions negative; microscopically, hyaline and epithelial cells numerous. Blood pressure 100/60; red blood corpuscles 4,000,000; white blood corpuscles 6,700; differential count of no importance; hemoglobin 75 per cent.; Wassermann negative. The kidney function test shows a fifty per cent. return of the dye in two hours and fifteen minutes. The total secretion of urine during the test period was 1030 c. c. Examination of the stool was of no importance.

Radiographic examination.—The x rays, made by Dr. Maurice Feldman, showed the stomach in right pelvis; completely rotated; pylorus and duodenum to the left; the right abdomen showed an absence of colon and the left diaphragm could not be seen. A colon enema showed the entire colon in the left thorax.

Impression.—Diaphragmatic hernia (left side) with the entire colon in the left thorax; the stomach was completely rotated.

2350 EUTAW PLACE.

Diverticulosis

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The word "diverticulum" is derived from the Latin *diverto* meaning "to turn aside," and as applied to the digestive tract means a nonneoplastic outpouching of the intestine having a lumen that does or did connect with the bowel. Diverticulitis signifies inflammation of a diverticulum, and peridiverticulitis is an inflammation of the structures surrounding the sac.

Early observers looked upon diverticulosis as a pathological curiosity rather than an important clinical discovery.

In 1710, Chomel (1) reported finding at necropsies pouches or diverticula of the duodenal portion of the bowel. It seems uncertain whether Morgagni (2) in 1762 described true duodenal pouches or some sort of pyloric protrusions which he had found as a cause of death. Fleishman (3) in 1813 reported true duodenal diverticula. In 1853 Virchow (4) pointed out the frequent occurrence of "isolated circumscribed adhesive peritonitis" on the colon, particularly on the hepatic, the splenic and sigmoid flexures. The origin of such local inflammatory changes in the intestinal wall, in its serous covering mesentery, and surroundings he attributed to constipation, thereby sharply differentiating these processes from catarrhal and dysenteric inflammations. Virchow called attention further to possible sequelæ, such as adhesions and contractions, which, for their part, furnish the bases for other groups of symptoms. He was unable to describe the clinical picture of the affections, but believed that many of the cases were misinterpreted as inflammations of the gallbladder and the like.

Rokitansky (5) in 1861 described the condition accurately and Roth (6) in 1872 reported other cases and advanced theories as to the etiology. Windscheid (7) described three cases of acute exudative inflammation involving the entire ascending colon. Herschel and Good (8) in 1880 also added cases, as did Seippel (9) in 1895, Le Tulle (10) in 1898, and Marie (11) in 1899. Hodenpyl (12) in 1900 found the deformity in connection with jejunal diverticula and since then many more cases have been recorded.

Graser (13) was the first to demonstrate the association of acquired diverticula with these pathological processes of the intestine, Bittorf (14) in his contribution on pericolitis attributed extension of infection from surrounding structures; protracted, severe catarrhal and dysenteric affections; intestinal ulcers (tuberculous, syphilitic, typhoid and carcinomatous); constipation and diverticula, the last especially in those cases in which the sigmoid was involved.

In 1911 Buschi (15) made a summary of all the then known cases, fifty-four instances, including three of his own.

This brings us to a period when the röntgen ray investigations began to throw new light on the pathology of diverticulosis in vivo. Bauer (16) in 1912 comments on cases he had observed and attempts to evaluate their clinical significance. Davis (17) reported cases causing death. Baldwin (18), Wilkie (19) and others confirm this. Röntgen ray interpretations now play an important part in most of the reports of this disease, and many illustrated papers have been appearing which prove the frequency of diverticulosis and its relation to other pathological conditions.

Case (20) in 1913 showed four cases in routine röntgen work. Akerlung (21), Linsmayer (22), Rosenthal (23), Secher (24), Spriggs (25) and others have made the subject more interesting by their recent timely papers.

Along with this the problems of operative treatment in diverticulosis has been raised by reports of Forssel (26), Basch (27), Seigert (28), Murchison (29), Lewis (30), and Moore and Ritchie (31).

Diverticula may be congenital or acquired, the former being designated true and the latter false. In true diverticula intestinal tunics constitute the wall, while in false diverticula, one or more coats give way, permitting the mucosa to herniate outward, forming a pouch that may or may not possess a peritoneal covering. Occasionally true diverticula, as a result of prolonged distention, become false, in which case weakened or thinned intestinal musculature shows at the base.

Intestinal diverticula may occur at any age of life, but are comparatively frequent in the middle and especially the late period.

Telling (32) cites 105 cases presenting diverticula, sixty per cent. of which were attended by symptoms. In eighty of Telling's collection the age and sex are given of which fifty-four are males and twenty-six females. Thirty-three cases presented no symptoms which attracted attention to the diverticula and were only incidentally discovered. Forty-seven had symptoms due to diverticula.

PATIENTS WITHOUT SYMPTOMS	
Decades	*Number*
1st to 4th included	0
5th	3
6th	2
7th	13
8th	13
9th	2
Total	33

PATIENTS WITH SYMPTOMS	
Decades	*Number*
1st and 2nd included	0
3rd	1
4th	4
5th	9
6th	14
7th	15
8th	4
9th	0
Total	47

Fielder (33) reported a case in a patient aged twenty-two years; Ashhurst (34) reported a case in a patient aged seven years, nine months (operative diagnosis).

Although diverticula may be found in any portion of the digestive tube from the esophagus to the anus, they are rare in the small intestine, occasional in the ileum and cecum and very frequent in the descending colon and sigmoid flexure. Sobel (48) reports a case of gastric diverticulum. They also involve the rectum more often than published cases or postmortem statistics indicate. They are moreover the source of grave pathological processes and sequelæ.

At autopsy, Hansmann (35) demonstrated four

hundred diverticula (small and large intestine) in one case (male aged eighty-five years , death from pneumonia); Curveilhier (36) two hundred, Hodenpyl (37) seventy-nine, and Kivlin (38) over forty, respectively, in a single colon. Treves (39) cites a case in which the entire sigmoid was studded with pouches. McGrath (40) has counted forty-four diverticula from the splenic flexure to the upper rectum.

In the small intestine the diverticula have been observed almost invariably above the mesenteric border, were usually empty, and but one case has been noted in which infection of them gave rise to symptoms (Gordinier and Sampson, 41).

In the large intestine the diverticula have been demonstrated more frequently aside from the mesentery, commonly in relation to the appendices epiploicae, most constantly in the sigmoid and were the source of pathological processes varying in degree from mild to the gravest.

The size of the diverticula varies from microscopic to that of a hen's egg (average size about that of a large pea).

The shape is usually round or ovoid. The smaller, especially were frequently flattened and their long axis transverse, parallel with the bundles of the circular layer of the muscularis. The greater number are sessile; the pedunculated are rather globular in form.

In structure the majority of the advanced diverticula consist of mucosa, submucosa and serosa. Some are composed of all the mural layers. Their openings into the intestinal lumen varies in diameter from nearly that of the diverticula cavity to a diameter much narrower thereby, in the latter case, a stenosis of the exit results.

ETIOLOGY

Opinions vary concerning the etiology and pathology of diverticulosis. In some instances the etiology of the acquired diverticulosis is obvious, but in other cases the causation of the intestinal pouchings cannot be explained except on the basis of inherited weakness of intestinal musculature that gives way owing to gas or fecal distention.

No single factor explains the origin of acquired diverticula in the large intestine, but the process results from a summation of several factors.

1. *Muscular deficiency.*—In the formation of the more common type (socalled false diverticula, hernia mucosæ) are to be seen the same factors which contribute to the production of typical hernia elsewhere in the body, namely, insufficient resistance of the wall, increased pressure from within, the passage of a structure through the wall, forming a *locus minoris resistentiæ,* along which the protrusion makes its course.

That diminished tone of the intestinal musculature may result from general degenerative changes, of advancing age, or debilitating diseases and senility is selfevident. It is very probable that local conditions within the bowel also contribute to the mural weakness. Chronic constipation, complicated by gas and fecal accumulation is an important factor.

Hemorrhagic infarcts, worms, foreign bodies, obesity (with fat intestinal wall), ulcerative colitis, dilated intestinal glands and other conditions have led to the formation of pouches by perforating, destroying or indenting the mucosa, or impairing intestinal musculature.

New growths and various chronic obstructive lesions responsible for obstipation, coprostasis and gas retention are causative factors in diverticula because of accompanying frequent distention, presence of fecal masses and atrophy or thinning of intestinal tunics.

It is also conceivable that congenital muscular insufficiency may be present here as well as elsewhere in the body. The young patients, and those in early middle life, who give no previous history of general debilitating or local intestinal disease, suggest the plausibility of the assumption.

2. *Intraintestinal pressure.*—That the factor of pressure from within is present in the large bowel, is evident from the function of this division of the digestive tube, and, as is well recognized, this force is frequently accentuated by abnormal accumulations of gas and stasis of the intestinal contents, especially in the sigmoid flexure.

Wasting diseases, cancer, tuberculosis, colitis, etc., with intestinal atrophy, favor the formation of diverticula by impairing longitudinal and circular muscle fibres so that they stretch, break or separate, allowing the mucosa to herniate through them when pressure is exerted from within; in such cases normal colonic sacculations sometimes become exaggerated and are mistaken for diverticula.

Mummery (42) emphasizing the pressure theory notes that diverticula are sometimes seen in the bowel wall above a stricture. Such a case was shown at the Royal Society of Medicine in 1919, by Gray Turner. The specimen showed a cancerous stricture of the colon above it. Mummery also reports a case in which a large diverticulum was present in the upper part of the sigmoid above a rectal stricture (carcinoma). He has often observed adhesions which would tend to cause obstruction of the lumen of the colon at the rectosigmoid junction and which appear not to be secondary to the diverticulum.

Normally the tissue surrounding the vessels in their course through the muscular wall is less resistant than the muscular layer itself and it is natural to suppose that its resisting power will also be weakened by the same conditions which affect the musculature. Furthermore, it is conceivable that circulatory disturbances from whatever cause which produce chronic congestion of these vessels with intervals of lowered blood pressure would decrease still more the resistance at these points and thereby facilitate the protrusion of the mucosa.

Klebs has pointed out the anatomical weak points on the mesenteric side of the tube where the blood vessels enter its wall. Herschel found, on distending the bowel, that furrows and even small pouches between the blades of the mesentery pointed to the possibility of false diverticula being produced by intestinal pressure.

Roth reporting five new cases, asserts that they are always of the false type and always on the concave side of the tube. Forster denies that this is universal. Fischer confirms Kleb's statement that small peasized diverticula appear beneath the serosa at the location of blood vessels entering its wall. Grasser and Hansemann also find the foramina, especially of the veins, to be a *locus minoris re-*

sistantiæ in the muscular and fibrous coats. Nevertheless, a few definite cases of congenital origin are reported in which all of the layers of the bowel completely surround the sac. In Linsmayer's collected cases the youngest patient was thirty-six years.

Ages.	*Number of Cases.*
40 to 50	3
50 to 60	5
60 to 70	13
70 to 80	14
80 to 87	4

This would seem to support the view that some degenerative change of the bowel wall is a causal factor.

The other more rare type of acquired diverticula, in which all the mural layers are involved, is probably the effect of a localized weakening of a sacculation together with traction by adhesions from without, or by exaggerated pressure upon this point from within. It is to be noted that congenital diverticula may also occur in the large bowel. The process observed, in which the mucosa tended to bulge outward between separated muscular bundles and appeared independent of the course of the vessels, is very likely due to exceptionally insufficient structure of the muscular layer. This condition may account for some of the infections in which typical diverticula are not demonstrable.

All authors have noted the frequent presence of diverticula in relation to the appendices epiploicæ. Bland Sutton (43) has illustrated by diagrams that this fat is directly continuous with the subserous fat and if there is the slightest tendency to the formation of diverticula it will readily be seen that the soft fatty tissue of the appendix forms a point of lowered resistance.

The observations of McGrath seem to show that this relationship between diverticula and appendices epiploicæ is due to the fact that these fatty masses are points where the larger vessels enter the intestinal wall, since they are the terminations of fat bands, extending from the mesentery and covering these vessels.

Gant (44) in a synopsis of seven cases seen by him reports as follows:

Sex	*Age*	*Variety and Complications*	*No. of Diverticula*	*Location*	*Result*
M	42	Cordlike remains of Meckel's diverticulum (yolk sac).	1	Extended from umbilicus to ileum.	Complete recovery.
F	52	Large pouchings (diverticula) incident to constipation and fecal impaction.	7	Descending colon and sigmoid flexure.	Immediate marked improvement.
M	49	Diverticulum with vesicointestinal fistula.	20	Rectosigmoidal juncture.	Temporary fecal fistula permanent cure.
M	60	Diverticulitis with abscess.	4	Sigmoid flexure.	Recovery in three weeks.
M	47	Diverticulitis with abscess that discharged through the rectum.	1	Rectosigmoidal juncture.	Death from exhaustion three weeks following operation.
F	49	Carcinoma associated with a diverticulum.	1	Sigmoid flexure.	Recovery, death year later from recurrence.
M	63	Diverticulitis of cecum simulating neoplastic tuberculosis.	1	Cecum.	Fecal fistula and death from exhaustion four weeks later.

That these pouches are sometimes congenital is evidenced by the fact that they are sometimes single and sometimes met in association with other anomalies, such as Meckel's diverticulum and esophageal pouches. Wilkie, in particular, has championed the belief that these anomalies of structure are congenital in origin. He has pointed out that the duodenum in the course of normal development gives off hepatic and pancreatic buds, consequently, developmental anomalies might be expected to occur more frequently in this than in other regions of the intestinal tract. The latest observations of Bell (45) furnish good anatomical evidence, however, that many instances of duodenal diverticula are not developmental in origin, although the socalled Meckel's diverticulum, possessing musculature of the intestine, presumably is congenital in character.

In all types sex is evidently a predisposing factor, since the disease occurs more than twice as often in men as in women.

PATHOLOGY

Congenital diverticula are usually found in the small intestine while the acquired diverticula ordinarily involve the cecum, colon and sigmoid flexure. The acquired class is generally considered as independent of development deficiency, but it has been suggested that some of these are, in a certain sense, congenital.

Two types of this class have been recognized: one in which all layers of the intestinal wall are involved, the other in which only some of the layers take part. The most common type of diverticula consists of a protrusion of the mucosa and submucosa, through the muscular layer of the bowel, still covered with the serosa. This form has been described as a hernia mucosæ and well expresses the formative process, which consists of a protrusion of the mucosa through a weak point in the muscularis.

Diverticula vary in size from that of a pea to that of a hen's egg. It may be single or there may be more than a hundred, they may be confined to a single intestinal segment or scattered over several. The form varies from straight pouches with large sufficient openings to those of flask shape, constricted at the neck by the perforated muscular layer, with the bulged out body beneath the serosa.

The pouches may remain healthy or at any time undergo secondary changes (diverticulitis) that may extend to surrounding tissues (peridiverticulitis). Once a diverticulum has formed and feces have found their way into it, the tendency is for it to get gradually larger. The contained feces may vary in consistency from normal to hard concretions. Although the mucosa of some diverticula appears intact, yet as a result of the continued mechanical pressure of hardened fecal material and toxic irritants, the lining epithelium is frequently chronically inflamed in the same manner that stercoral ulceration takes place above a stricture of the rectum. The injury may vary in degree from atrophy to ulceration. Concretions become encapsulated within the diverticula and where the pedicle has sloughed a free foreign body may occur in the abdominal cavity.

Associated with these processes other pathological changes result.

1. As the diverticulum enlarges the walls of the sac are thinned, sometimes to such an extreme degree that only a film of peritoneum separates the diverticula lumen with its fecal contents from the peritoneal cavity. This condition had led to general peritonitis due to osmosis of bacteria or their toxins.

(*To be concluded*)

A Scientific Basis for Therapeutics*

Founded Upon a New Method of Clinical Examination, the Result of Certain Researches of Seymour DeWitt Ludlum and Ellice McDonald

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It has been my privilege to observe the course of certain researches now progressing by Ludlum and McDonald. These have led to a new method or system of examination and have opened up so much of value and proven usefulness in so many phases of disease, impaired nutrition, and predisease conditions that a personal presentation may aid their general appreciation and comprehension.

Their method is essentially the determination of the vagus-sympathetic balance of the vegetative nervous system by means of the smooth or nonstriated muscle as an index and, correlated with this index, the acid-base (hydrogen ion concentration of the blood, P_H) in its bearing upon vegetative nervous system action.

More and more evidence accumulates to show that the vegetative (or involuntary) nervous system controls metabolism and directs such changes in the human body as occur in malnutrition, predisease and disease conditions. Ludlum and McDonald in a preliminary communication (1) have laid down the principles and postulates of their theory without any direct application to special disease conditions.

The vegetative nervous system controls metabolism largely through its power over the involuntary muscles of the body such as in the heart, intestines, lungs, bloodvessels, glands and capillaries. Indeed Glaser—who has done considerable research upon the subject in Berlin—states directly that everything points to the regulatory action of the vegetative nervous system in the metabolism of both organic (sugar, fat, proteins) and inorganic substances.

In the problem of nutrition and metabolism the mineral content bulks large. Indeed deficiencies of one mineral element, or harmful excess of another, lie at the basis of that stable nutritive equilibrium so essential to health and arising in every clinical problem. This is especially significant in protracted, obdurate, chronic, or socalled, incurable diseases and also significant in predisease conditions.

This includes diseases of the body and also of the mind. Diseases of the soma are becoming well appreciated, admirably elaborated and effective. Those of the psyche are vastly more complex, difficult and resistant, being a combination of both.

In these researches, under consideration, the work was begun with the aim of solving certain problems among psychoneurotics, many extreme depressive states, also some involutional melancholias. The work was begun on cases at Ludlum's private sanatorium at Gladwyn for mental diseases, and is being carried on there, and also at Blockley in McDonald's gynecological service. Now it has become enlarged so as to include a variety of internal, metabolic and other diseases and obstinate effects of disease.

The aim has been to explain alterations in vegetative nerve action—vagus-sympathetic balance—and to translate these in terms of the acid-base balance and inorganic salt balance. In short, it is a problem of imbalance, nervous and inorganic, and they have been able to show an association between the two. I availed myself of their aid in a number of grave and obscure disorders and these were remedied beyond all expectation.

This communication is presented to the American Therapeutic Society in the hope of securing constructive criticism. Both the research workers are here today to present their own testimony. This includes a mass of evidence among which are about one hundred direct tracings over the fluoroscopic box giving revelations of altered postural tone of its smooth muscle in the stomach and intestines.

In known diseases and in known conditions as menstruation, definite changes in the postural tone and haustral like (pockets in the terminal colon) arrangement of the large intestine are displayed. These are shown to be dependent upon vagus and sympathetic preponderance in the vegetative nervous system. When experimentally mineral deficiencies are supplied or the excess amounts reduced, the secondary changes in the postural tone are equally characteristic and uniform. It is a study of biochemistry showing fluctuations in rhythm, energy, amplitude and rate in direct proportion to hydrogen ion concentration of the blood.

It was found that when the condition of the blood was more acid (lowered P_H), vagus effects upon the heart, intestines, bloodvessels, capillaries, etc., were found. And that when the blood was more alkaline (higher P_H) morbid sympathetic effects were found. These varied effects could be produced by altering the hydrogen ion concentration of the blood and by administering various salts of potassium, sodium, calcium, magnesium.

The theory is that: all symptoms of disease are dependent upon cell changes and that cell changes are produced by surface action upon the semipermeable cell membrane by the action of various substances (inorganic salts, proteins, lipoids, toxins, antibodies, etc.) which increase or decrease the permeability of the cell, alter viscosity, inhibition, hydration, and potential differences, so producing an alteration in bioelectric variation.

They believe that they can distinguish and appreciate these alterations in the cell by means of the smooth muscle of the body (particularly that of the large intestine) and they correlate this with hydrogen ion concentration (acid-base balance) so delineating the definite condition of the body balance (nervous, inorganic and colloid) in various diseases and laying down a definite scientific basis for therapeutic measures. An example of this is in tetany, where the smooth muscle of intestine is dilated and there is increased P_H (decreated hydrogen ion con-

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centration, more alkaline) and there is less calcium and more potassium in the blood. In other words it is possible to determine conditions in the human body as in the experimental work of the biologist upon single celled organisms.

In their postulate, they consider the processes of disease to be those in which the basic protoplasmic processes are deranged for whatsoever special reason. Every symptom of disease represents an alteration in the function of cells. Many symptoms are not even accompanied by detectable disturbance in anatomical relationship or noticeable alteration in cellular character.

In medical research and opinion, anatomical relationship holds first place and medical thought has concentrated upon end alterations in cellular character, or anatomical results rather than upon transient cellular changes, i.e., the mechanism of disease. Symptoms must be translated into cell alteration and cellular reactions vary with the tonic content and with the influence of ions upon the protoplasmic semipermeable cell membrane. Energy constant, physiological action is associated with a constant bioelectric variation and, in disease (2), the normal bioelectric variation is upset. They believe that by means of their method of examination, it is possible to estimate the hydrogen ion concentration and the oxidation-reduction poise which is a measure of the bioelectric potential.

Oxidation has come to be considered by the chemists (3) to be nothing more or less than the taking up of electrons, and reduction the giving up of electrons. The production of electric current is thus oxidation-reduction and bioelectric variation depends upon oxidation-reduction in the human body. So that in oxidation-reduction there lies a most fundamental process in the human system. It is believed that this new method will supply an estimate of this process or bioelectric variation through the study of the balance of the vegetative nervous system, the vagus part of which is active in acid oxidation conditions and the sympathetic of which is active in alkaline reduction conditions.

This will exert an immense importance in the choice of drugs and foods. Every drug should be first considered as to whether it is oxidatant or reductant in character and afterwards in regard to its specific or particular effect. This consideration may be obtained by study of the drugs by this method, or by knowledge of the action upon smooth muscle. An example is atropine which is a reducer, dilates smooth muscle and diminishes acidity in the stomach; or quinine which is an oxidizer and stimulates smooth muscle as shown by its action upon the uterine muscle.

In brief: drugs and other therapeutic agents must be considered chemically as to whether they have positive or negative balance. Langmuir has shown that there are three distinct types of valence:

1. Positive valence, the number of electrons an atom can give up.
2. Negative valence, the number of electrons an atom can take up.
3. Covalence, the number of pair of electrons an atom can share with its neighbors.

So that all drugs must be considered as to whether they take up electrons (and are oxidative) or as to whether they give up electrons (and are reductive) because oxidative acid conditions predispose to vagus action, and reductive, alkaline conditions predispose to sympathetic action and these branches of the vegetative nervous system control the action of the heart, lungs, stomach, intestines, glands, kidneys, blood vessels and capillaries, and so control metabolism in all its branches.

In disease also, the acid-base, oxidation-reduction, vagus-sympathetic balance must be considered, because in disease these are deviated from the normal in one way or another. It is of importance to estimate this for two reasons, first to understand the disease processes and second, to apply the correct or complementary therapeutic agent.

Tetany being alkaline, reductant, sympathetic in balance requires calcium, acid, vagus stimulating substances, and so on.

Here according to this theory is a definite, direct, intelligent basis upon which to apply therapy to disease. This can be applied to the action of the endocrines, as for example the reductant, sympathetic, smooth muscle dilating action of adrenalin.

The basis of their method of examination is the then state of smooth muscle as determined by x ray (fluoroscopic) study of the gastrointestinal tract, and the then state of the acid-base conditions of the blood as determined by the P_H determination and the correlation of these to give the acid-base, oxidation-reduction, or vagus-sympathetic balance.

The study also is of importance in determining factors in nutrition and in determining remedial measures as to medication and choice of foods.

Emotional disorders, such as of rage according to physiologists (Cannon *et al*), produce inhibitions of the bowel, heightened blood pressure, sets free sugar in the blood and makes a general adaptation for fight. This is brought about largely through the sympathetic nervous system.

They, Ludlum and McDonald, have found by means of x ray and other procedures that just the opposite situation occurs in anxiety states, a marked acceleration of the bowel peristalsis, a lowered blood pressure and a lowering of blood sugar, a general maladaptation for fight is brought about through acceleration of the vagus nervous system.

These questions arise: why is not immunity merely a mechanism for restoring the proper balance of salts and hydrogen ions in the cell?

Why are not the potential differences in the cell the basis of magnetic flux?

The question of validity of their contentions may be approached from three angles:

1. Vagotonic or sympathicotonic balance can be shown as an essential feature in well being (health), or ill being (disease).
2. Smooth muscle reactions of hollow or tubular viscera can—by their alternation—be shown as original postural balance, and:
3. By a correlation of states of balance with that of hydrogen ion concentration.

The vegetative nervous system controls the heart that beats, the intestines which move, the kidneys which secrete, the complex actions of the liver, etc.

It is obvious that in disease there must be deviation in this state of balance. That is, there is a uniformity in the functional expression of that par-

ticular disease before the organism as a whole can come to rest, or to a mobile equilibrium.

Hence it is obvious that for each particular disease the vegetative nervous system—while controlling the organism as a unit—must then be deviated in predictable directions.

Why do children—undeveloped as to their nervous systems—incur diseases peculiar to their age? Probably because their metabolism has not reached a degree and force of resistance to any depressing action on one or other side, vagal or sympathetic.

Connections between the two nerve systems (constituting postural tone) are made at myriad points, forming convenient interrelationships. The important thing to bear in mind is that they are—in a sense—one way paths; at least in their general relationships between the two systems. All these work outside the voluntary realm.

Hence directive stimuli can only work—plus or minus—to a limited extent as activators or sedators. None the less experience shows that volition—conscious control—can be elicited and does act as a help, at least as a coadjutor.

It also shows how powerful are the effects induced upon the visceral and circulatory functions by induced movements, whereby the centers are stimulated directly. Such action—in my experience—is greatly amplified and elaborated by a combination of induced movements (being handled) and willed movements (performances). Indeed here is supplied an excellent determinable, reliable, convenient, safe and masterful means of enforcing equipoise.

The clinical situation may be described graphically as vagosympathetic imbalance.

The syndrome is exhibited by imbalances occurring in the smooth muscle—postural tone—of the stomach and intestines. Whereas individuals tend to conform to one or other type it may be that under stress or infection, metabolic or other irritation the type phenomena incline toward the opposite.

If so, the facts and causes need to be determined. This these gentlemen are engaged in doing.

Evidences so far point to the situation being one of excessive susceptibility to one or other mineral salt in the blood, or an incapacity to appropriate that which is needful, or in becoming hypersensitive to one other of the ten minerals in the body.

Consentaneously with this deficit being supplied or this excess being removed, many distressing and disabling conditions disappear. In the group under observation (psychopathies) gratifying results have already been obtained.

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Polypoid Ulcerative Colitis, Possibly Tuberculous*

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This case is presented as an illustration of what may be accomplished, with Nature's aid, by the internist's patient, persistent efforts to get in harmony with her, even when the patient is almost in *extremis*, and when it is quite clearly evident that the operations thought necessary by the surgeons to relieve what they suspect as the underlying conditions, would cost the patient her life.

Case.—The patient, a girl of nineteen, presented herself for treatment on July 2, 1919. Her chief complaint was diarrhea, accompanied by blood and mucus, which, alternating with short periods of constipation, had persisted for nearly a year. During this time she had lost fifty pounds, nearly half the body weight, and complained of great weakness.

The family and personal history to the beginning of this illness in September, 1918, was negative. The present trouble began with an acute attack of dysentery with daily fifteen or more loose, watery stools containing blood and mucus. The passage of the stool was accompanied by considerable tenesmus. After a few days to a few weeks of such trouble, the bowels would become constipated, with dry hard stools, having the appearance of sheep balls. The patient was confined to bed because of weakness. Her appetite was variable—at times ravenous. She complained of moderate abdominal discomfort, attributed to accumulations of gas; of shooting pains in the head and great weakness.

Physical examination showed a girl fifty-nine and a half inches tall, weight fifty-seven and a quarter pounds; greatly emaciated, skin very pale and dry; tongue coated; whites of eyes pearly, pupils responding normally to light. There was a slight left cervical adenitis. Her heart was normal in size, there was myocardial weakness which seemed to be associated with the general weakness; pulse was 108. There were a few fine crepitations in apex of left lung; liver and spleen of normal size. There was very slight general abdominal tenderness; a slight rupture in the right inguinal region. Pelvic examination revealed a small, slightly retroverted uterus, and a slight erosion of the cervix. The knee reflexes were present. There was a double lateral postural curve. On account of great weakness it was only with difficulty that the patient could stand at all.

Morning temperature was 100° and at 4 p. m. 101.4°. For a period of three months after entrance the temperature varied from 98.6° in the morning

*From the Battle Creek Sanitarium Clinic.

and 99° or 99.4° in the afternoon to 100° in the morning and 101.8° in the afternoon.

The urine analyses showed the presence of a slight trace of indolacetic acid and gave a positive Bergell's reaction; total solids were low, 16.77 grams; ammonia .233; urea 4.16; chlorides 5.58; no albumen or sugar, crystals or casts of any kind.

There were several successive blood tests made on entrance, the lowest point being hemoglobin 20, red cells 1,400,000, white cells 16,500, color index 64. The Wassermann test gave negative findings, and the chemical test of the blood showed a blood sugar of 120. Her alveolar CO_2 tension on July 22nd was 33; another test on August 3rd showed it to be 37. Her blood pressure was 100 systolic and 45 diastolic; pulse ranged from 92 to 108.

Several examinations of warm stools, as well as others, were made, but no Ameba dysenteriæ or other parasites were found. Several examinations were made for tubercle bacilli but none were found; a few streptococci and staphylococci were isolated. The stools were putrid and contained many bacilli putrificus, Bacilli Welchi and Bacilli coli.

A proctoscopic examination showed the mucous membrane, as far as could be observed, covered with hemorrhagic areas. No polypi were observed at this time; later, when the proctoscope could reach a higher point, a few small ones were seen.

Because of the fine crepitations in the extreme apex of the left lung at the back, stereo plates were made. These plates showed a transverse increase especially to the left in the auricular region of the heart. Everything was clear in the left lung except the extreme apex which showed a very slight cloudiness. The right lung showed the base clear, the lung root shadow enlarged with some early infiltration around the ascending bronchi close to the middle line.

Metabolism examinations showed an average pulse of 105, average respiration 11, and a metabolism of plus 10.

A fundus examination of the eyes showed the media clear, both nerve heads swollen, the entire outline being partially obscured, vessels slightly tortuous; there was a double optic neuritis.

By x ray of the gastrointestinal tract, no gallstones were recognized; stomach was normal and emptying time normal; no ileac stasis; ileocecal valve incompetent. There was a great deal of gas throughout the colon during the examination and there was evidence of mucus. The cecum was moderately dilated, its tip lying about even with the brim of the pelvis. The middle of the transverse colon occupied a low position but was movable. The distal colon was spastic throughout. There was a definite filling defect about the middle portion of the pelvic loop that remained permanent throughout the examination. This filling defect involved two or three inches of the colon. There was some tenderness noted in this region and the cecal region was also tender. This filling defect offered some hindrance to the entrance and exit of the barium enema. Emptying time of the colon about thirty hours (Fig. 1).

Because of the x ray evidence of a filling defect in the colon, the question of surgical intervention was considered; in fact the surgeons were very confident that the filling defect was of either a cancerous or tuberculous nature. But on account of the patient's

Fig. 1.—X ray of gastrointestinal tract showing the cecum moderately dilated and a definite filling defect about the middle portion of the pelvic loop, involving two or three inches of the colon.

Fig. 2.—X ray of same patient as Fig. 1, after three months' treatment, showing improvement in calibre of colon. A definite filling defect still existed in the middle portion of the pelvic loop, which offered resistance to entrance and exit of barium enema.

general condition and the fact that she began to show improvement almost at once, it was thought best to postpone operative procedures indefinitely and to go on with medical treatment. I was encouraged to persist in this idea, after two of the first five weeks of slow improvement, by a story told on himself by a famous surgeon visiting our clinic at the time. He told how he had been very much interested in the problem of curing tuberculosis of the kidney. He thought if he could produce a Bier's hyperemia by tying off some of the veins, he might cure it in that way. So he began some experiments on rabbits, inoculating them with tubercle bacilli. After a sufficient length of time he autopsied his controls and found that they had tuberculosis. He was just about to operate and tie off the vein when he became very busy and his mind was diverted from his experiments.

He was unable to get back to the rabbits for several weeks. At the end of that time when his attention was called to the animals by an attendant, he found that instead of dying, as he had expected they would do, they had, under the good food, fresh air and sunshine, quite recovered. He used this as an example to bring to our minds the fact that the only use of physicians anyway is to point out where you are out of harmony with Nature and to assist you in getting back into harmony. And so I went on.

The patient was confined to her bed; was put on a strictly nontoxic dietary, all vegetables and fruits were pureed; was given yolks of eggs and acidophilus buttermilk. She was given no bread or cereals that contained any bran, no sweet milk, whites of eggs or meat. During the first few weeks she was given three dessertspoons of paraffin oil and of agar three times a day, the quantity being reduced gradually to one dessertspoon of each three times a day. She was also given a liquid culture of Bacillus acidophilus and Bacillus bulgaricus, and three fourths of a grain of sodium cacodylate hypodermically every other day for approximately three weeks. She was kept in the open air and sunshine as much as possible; was given light tonic hydrotherapy, such as hot fomentations over the abdomen and back, foot baths, cold mitten frictions, etc. During intervals the Preissnitz compress was used continuously, changing the bandage as often as dry. She was given cleansing enemas of cooked cornstarch made the consistency of thin cream. These enemas were followed at first by a local injection of a paste made of bismuth and petrolatum, and later on a paste of bismuth and paraffin oil was used.

At the end of two weeks her bowels were under much better control, moving less frequently, and she was eating wonderfully well, nothing seemed to disagree with her and she was always hungry and enjoyed her food. She still complained of great weakness, more marked just after the bowels moved; or if she had any gas in the stomach, she would have quite a little distress. In another week her headache had been entirely relieved and she had begun to gain in weight. She was eating at this time about 2700 calories a day. Her bowels were moving much less frequently and the stool was of much better character; the foul odor had disappeared and there was less blood and mucus.

At the end of five weeks her bowels moved only three times during the twenty-four hours. During the week previous she gained two and a half pounds. A proctoscopic examination at this time showed that the slight elevations visible on the mucous membrane of the bowel were disappearing and that the mucous membrane looked much healthier.

By September 8th she had gained fourteen pounds, could now easily walk a considerable distance without fatigue, and was going out driving twice a day. Her appetite continued to improve and she often ate as much as 1100 calories for a single meal and had no trouble in taking care of it. During this time the improvement in her blood count kept pace with the gain in weight and improvement in the intestinal condition, showing a hemoglobin of 40, red cells 2,500,000, white cells 15,000, color index 54.

On September 23rd an acute thrombophlebitis developed in the patient's left leg, which troubled her some for a few weeks but did not seem to interfere with her general improvement.

A reexamination of the colon by barium enema on October 7th (Fig. 2) still showed a definite filling defect in the middle portion of the pelvic loop which offered considerable resistance to the entrance and exit of the barium enema. The rest of the colon was negative with the exception of the cecum, which was moderately dilated.

The patient's temperature gradually became normal about November 1st. On November 16th a blood count showed hemoglobin 75, red cells 3,800,000, white cells 16,000, color index 89. At this time she weighed eighty-two pounds, had a good appetite and normal temperature. On account of the phlebitis which developed in September she was compelled to remain in bed, but by the middle of November was able to walk about without much discomfort.

On December 29th a reexamination of the colon by barium enema still showed a marked filling defect.

By March 1st the patient weighed 101 pounds, was walking on the average of at least two miles a day, and the local condition had continued to improve. The proctologist was frequently able to twist some of the polypi which were lowest down in the colon from their pedicle and both she and the patient reported from time to time small and even occasional large pieces, fleshlike in character, being passed from the bowel. These, unfortunately, were lost before I had a chance to examine them pathologically. The last of March the patient was given leave of absence for six months.

She returned the middle of November, 1920. She had maintained her weight and her general condition was better than when she left. Her hemoglobin was 86, red cells 4,100,000. Her bowels were moving normally three times a day but she was passing small fleshlike fragments from the bowel from time to time.

In June, 1921, she reported for reexamination and observation. She weighed 110 pounds, normal for height. General condition was good. Polypi seemed to be gradually disappearing. She was rechecked in March, 1922, and again in May, 1922, and nothing abnormal could be found in the colon. The patient was weighing around 114 pounds; hemoglobin 96; bowels were moving normally three times a day with no artificial aid. At present she has been carrying on all normal activities for nearly three years.

Differential Counting With the Counting Chamber

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(*Concluded from page 15.*)

There can be no constancy about the appearance of the large lymphocytes in the blood in increased numbers, except that this will occur when the end of the subject's normal leucocyte response has been reached under stress of the particular infection.

These facts lend strength to the theory of Pappenheim (4) that the large lymphocyte is the mother cell, from which all other cells of the blood are either directly or indirectly derived and that failing leucocyte response, involving either one type of cell or another, is simply a break in the chain of mitosis between mother and daughter cells.

ABSOLUTE INCREASE OF THE LARGE LYMPHOCYTES

In evidence of the foregoing, I have observed the fact that the only time the large lymphocytes tend to decrease below normal absolute numbers is in the early stages of acute infections and when the tendency of the total count is to rise. When this becomes stationary, and especially when the total count tends to fall, while the infection is still active, the large lymphocytes begin to rise. It seems that in the course of the most severe forms of infection and toxic processes there is never a break in the process of leucocyte response involving these cells. In cases of bichloride of mercury poisoning, when the point is reached where all the other cells commonly represented begin to disappear from the blood, the large lymphocytes correspondingly begin to rise. In some cases the large lymphocytes may be equal in number to the polymorphonuclear cells in counts of 20,000, and where the small lymphocytes have fallen as low as from 100 to 500 per c.mm. The same is true of tetanus approaching the fatal stage.

To a lesser extent is this type of a lymphocytosis noticed in such conditions as gangrenous and ruptured appendix, severe abdominal peritonitis, later stages of intestinal obstruction and strangulated hernia, ruptured gallbladder and gastric and intestinal perforation, ruptured ectopic pregnancy, infection of the uterine cavity, threatening eclampsia and uremia, streptococcic septicemia and typhoid fever.

On the side of chronicity, we have such diseases and processes as malignancy, tertiary and latent syphilis, chronic malaria (5), some cases of tuberculosis in advanced stages, and all forms of focal infections (6). The extent of such a lymphocytosis, it must be borne in mind, will be governed, as already has been mentioned, by the severity of the infection, the chronicity of the process and the natural resistance of the individual. In general it can be said that the appearance of the large lymphocytes in increased numbers in the blood is not the best kind of an omen in any kind of an infection; for it means disorganization of the process of normal leucocyte response.

THE EOSINOPHILES

Through the older method of differential counting, little knowledge has ever been gained in placing correctly the eosinophilic cells, either normally or in disease. It is generally classed as one of the cells normally present in the blood, and in such diseases as bronchial asthma, splenomyelogenous leucemia and intestinal parasites, it has a well known clinical significance.

However, from a basis of hematometric differential counting, I have been able to gain much that is new regarding the diagnostic importance of this cell. Being present only in comparatively small numbers in the blood, it has been an easy matter to study it extensively from a basis of from 8,000 to 10,000 cells. I have been firmly impressed, as referred to in my article (7) that the eosinophilis cell is not a normal cell of the blood, in the strict sense of the word. Any cell of the blood that is normally kept up to certain absolute numbers, through physiological chemotaxis, surely has some degree of constancy about its presence in the blood. No such evidences, however, of physiological chemotaxis have I ever been able to detect; but, on the other hand, it has been plain that it is always an evidence of the abnormal, regardless of how insignificant its abnormality may be from a clinical basis. The best that can be said is that it is normally present in the blood only to the extent that minor pathology is normally present in most individuals. I have found it the most important single cell, from a diagnostic viewpoint, especially with reference to the probable location of pathology in the body. What might be termed the socalled normal absolute number of eosinophiles in the blood has been variously placed between 100 and 400 cells per c.mm. I would, however, place this number considerably below this and put it at about 50 per c.mm. and that anything above this must be regarded as being due to some specific extraneous cause.

EOSINOPHILIC POSITIVE AND EOSINOPHILIC NEGATIVE TISSUES

Unlike any other cell of the blood commonly represented, the rise or fall of the absolute number of eosinophiles can be definitely associated with disease or changes within specific tissues, organs or to the action of specific toxines.

Disease of those tissues or organs that have a direct and open connection with the circulation, and in which infection is liable to threaten life directly, uncomplicated, are never associated with an increase of the eosinophilic cells, but rather tend to temporarily remove these cells from the circulation. On the other hand, diseases or inflammatory processes of those organs or tissues of the body in which the route to the circulation is less direct and open, and in which disease and inflammations are always less active and never directly threaten life, invariably are associated with some increase of the number of eosinophiles. A practical classification of the tissues in this respect may be made as follows:

EOSINOPHILIC POSITIVE	EOSINOPHILIC NEGATIVE
Skin	Appendix
Subcutaneous tissues	Intestinal tract
Muscles	Peritoneum
Bones	Pericardium
Urethra	Uterine cavity
Bladder	Liver
Kidneys	Endocardium
Ovaries	Pleura
Male genital organs	Gallbladder
Fallopian tubes	Lungs
Arteries	
Spleen	
Lymphatic glands	
Sympathetic nervous system	

In diseases of the eosinophilic positive tissues, if the increase is not apparent, it will be plain that the eosinophiles are at least not reduced in number. The process of supply will have been sufficient to replace such cells as have been destroyed in the process of inflammation. On the other hand, in diseases of the eosinophilic negative tissues, it will be plain that the eosinophilic cells are taken out of the circulation more rapidly than they are replaced; in consequence of which they will be found markedly reduced or absent in the blood.

DISEASES ASSOCIATED WITH STRIKING EOSINOPHILIA

Most intestinal parasites, bronchial asthma, trichaniasis, splenomyelogenous leucemia, multiple tumors of the skin and disease of the bone marrow. A striking eosinophilia also follows removal of spleen.

DISEASES WITH MODERATE EOSINOPHILIA

Disease of the ovaries, gonorrheal infections, furunculosis and many other diseases of the skin, osteomyelitis, tuberculosis, syphilis involving the arteries, other diseases of arteries, sarcoma and rheumatism.

REDUCTION OR ABSENCE OF EOSINOPHILIC CELLS

Typhoid fever, acute appendicitis, abdominal peritonitis, acute infection of the uterine cavity, infectious endocarditis, bichloride of mercury poisoning, tetanus and severe shock to the nervous system.

EOSINOPHILIC TOXINS

Because of the eosinophilia in connection with certain intestinal parasites and bronchial asthma, it is evident that certain toxins act specifically in the production of eosinophilic cells. Considering the classification of the intestinal tract and the respiratory mechanism under the eosinophilic negative tissues, it must be remembered that it is not the location of the pathology here that has to do with the eosinophilic rise, but rather the specific toxines taken into the circulation. Mechanical irritation to the intestinal tract and the presence of some species of parasites do not produce the characteristic eosinophilia.

In general it can be said about the eosinophilic cells that a marked reduction or absence is not a good omen, but rather points to disease or infection of the more dangerous localities of the body. So long as the eosinophiles are appreciably present in the circulation, the condition may be considered more hopeful as to immediate danger.

What I have thus been able to detect about the eosinophiles with the counting chamber confirms a great part of what has at least been apparent to others who have had to work under a greater handicap, such as the older and more complicated system of differential counting from stained films (8). The foregoing classification of the eosinophilic positive and negative tissues are practically the same as have been set down more indirectly and in a scattered sense by eminent authorities on laboratory methods that are well known at the present time.

SUMMARY

Hematometric differential counting has brought out the following points of diagnostic importance in dealing with diseases and pathological processes most commonly met with in medical practice.

1. A point that permits the classification of diseases and pathological processes associated with an absolute polymorphonuclear leucocytosis.
2. A point that likewise permits the classification of diseases and pathological processes associated with a general leucocytosis.
3. Likewise a point that allows for a classification of conditions associated with a relative polymorphonuclear leucocytosis.
4. Also a point that allows for a classification of conditions associated with an absolute lymphocytosis.
5. A point that allows for the classification of conditions associated with a relative lymphocytosis.
6. A classification of the leucopenias into either an absolute polymorphonuclear or lymphocyte decrease or both and into primary and secondary conditions.
7. A clearer status of the clinical significance of an increase of the large lymphocytes and that such is an omen of failing leucocyte response under stress of severity of infection or chronicity.
8. That the eosinophilic cell is not a normal cell of the blood, in the strict sense of the word, but is present only as a result of the action of extraneous agents upon a certain class of tissues, or the result of the action of specific eosinophilic toxines.

In the articles to follow, certain important diseases and pathological processes, such as the practitioner most frequently has to deal with, will be considered in detail in the light of what a practical application of the principles herein revealed has shown in an extensive series of observations, both in my hospital and laboratory experience, I will try especially to bring out such points as I have found practical in differential diagnosis among groups of diseases that frequently resemble one another clinically, but belong to different classifications with reference to the differential count. Since my aim is simplification, I have made no attempt to distinguish between the large lymphocytes and the mononuclear cells or to deal with such cells as are not commonly met with.

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Practical Therapeutics

SOME RECENT EXPERIENCES IN THE TREATMENT OF GONORRHEA*

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It is generally agreed that there is no known specific treatment for gonorrhea. Though it is a self limited disease, its duration is often measured in number of years rather than in weeks, because local treatment with germicides often fails to destroy the gonococci hidden in Morgagni's crypts, Littré's glands, the prostate, vesicles, vasa and epididymes. And when a case is complicated by gonorrheal rheumatism the outlook for a cure is far in the future. We are therefore justified in our constant vigil for any new idea or product that promises to be a specific gonococcide. Since our dyes and chemicals that are intended to kill the Neisserian diplococcus directly fail in so large a number of cases, we are not averse to trying vaccines, enzymes and foreign proteins which are likely to increase the body resistance to the invading microörganisms. With these thoughts in mind, I agreed a few months ago to test a certain product, gonolin. I discussed the matter with Dr. H. E. Fraser, who gave me valuable advice and permitted me to test this product clinically at the Kings County Hospital and at the clinic of the Long Island College Hospital.

The preparation is a brown aqueous solution, which is marketed in one c.c. brown colored glass ampoules. It is intended for subcutaneous injections in the treatment of gonorrhea in all its phases. The average dose is one c.c. every two days. The manufacturers say that "it is a combination of protoenzymes that induce active phagocytosis. The enzyme has specific biochemical affinity for the toxin produced by the gonococci, and it neutralizes this toxin. The proteins of the preparation stimulate phagocytosis which carries off the cocci in the following manner: The leucocytes absorb the cocci and transform them into peptones, which are taken up by the erythrocytes and carried to the liver, where the peptones are transformed into aminoacids. The latter are finally eliminated from the system as urates, ammonia and fatty acids."

I have treated a number of patients with the preparation and gave it subcutaneously 689 times, one patient having received forty-four injections. There resulted no local reaction, infection or induration whatsoever, and patients did not object to the treatments. No case of anaphylaxis was met with. A few patients had a temperature of 101 to 103° F, during the first few days of treatment, but in these cases the high temperature was undobutedly caused by the disease (acute epididymitis, rheumatism, vesiculitis).

Among those treated there were twenty-one cases of acute gonorrheal epididymitis. They applied for treatment two to fourteen days aften the onset of the complication, in the average on the sixth day. These patients were kept in bed, ordered to drink much water and to keep their scrota supported with adhesive plaster bridges across their thighs or with some form of suspensory bandage. Each patient received one subcutaneous injection of the preparation in either arm every second day. No other treatment of any description was given—no hot or cold applications, no lotions, ointments, diathermy, narcotics or urinary sedatives and antiseptics. Fourteen patients (sixty-six per cent) were definitely improved in from two to seven days, average five days. By definite improvement I mean the following: entire relief from pain, normal temperature, ability to stand and walk in comfort while scrotum is supported by suspensory bandage, and appreciable reduction in size of inflammatory mass. The other seven patients fared as follows: One who now had relapse of infection of same epididymis was definitely improved in twelve days. One whose epididymitis was also complicated with acute severe vesiculitis, was improved in twelve days. This patient received hot sitz baths three or four times a day for four days for the vesiculitis. Two cases in which there was a marked effusion of serum in their tunicæ vaginalis, giving them the appearance of fair sized hydroceles, took ten and twenty days, respectively, to improve. Two cases of bilateral epididymitis were improved in sixteen and twenty-four days respectively. One patient required surgery: We first saw him six days after onset of epididymitis. It was enormously swollen and was extremely tender; temperature 102° F. After ten days' treatment with the preparation there was no improvement in any symptoms. At operation both the testicle and epididymis were found suppurated and castration was done. Culture showed Baccilus coli and staphylococci. In all cases except in the patient who had orchidectomy, after the initial definite improvement as described, further gradual improvement continued while the treatments were administered every two days. Every patient who continued treatment had only a small nodule in globus minor at end of two months. A few also had slight thickening of body of epididymis. None showed any induration in globus major.

While on the subject of epididymitis, I wish to mention a few facts about its pathology, as gleaned from this limited series of cases: Time of its appearance in relation to the duration of gonorrhea varied from ten days to two years. In eight patients, one third of total observed, it developed in the third week. In one case it developed in the second week. Nine patients had the complication between the fourth and tenth weeks, so that in eighteen patients out of twenty-four (seventy-five per cent) there developed acute epididymitis during the first two months of gonorrheal urethritis. The appearance of epididymitis in the balance of six cases varied from three months to two years. Frequency of occurrence of epididymitis on the left side as compared with the right side: Eleven patients had it on the right side, ten patients on the left side, and three patients on both sides. This finding is at variance with the popular impression that epididy-

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mitis is more frequent on the left side. Condition of vesicles, ampullæ of vasa and prostate as revealed by palpation rectally: In four out of twenty-two patients (eighteen per cent), the findings were negative. In the remainder (eighty-two per cent) there was definite pathological condition revealed to the examining finger either in the ampullæ, vesicles or prostate, usually on the same side as the inflamed epididymis, but in a few cases both sides were involved in the perivesiculitis and prostatitis. Gonococcus complement fixation test results: In nineteen cases where the test was made, sixteen gave positive result, one was doubtful, and two were negative. The doubtful report was in a case of proved Neisserian infection, and, in view of the rest of the clinical picture, we may include it among the positive cases. One of the negatives was in a case that was clinically a gonorrheal urethritis of nine months' duration, but in which no gonococci were found in two urethral smears, made a week apart. The other negative was in a case of acute urethritis, clinically gonorrhea, of six weeks' duration, with first two glasses of urine cloudy, but in which we were unable to get a drop at the meatus and no smear was examined. There is therefore some doubt as to the causation of the urethritis in the two negative cases, and if we leave them out of consideration, we have practically one hundred per cent positive blood complement fixations in acute epididymitis, a fact worth noting, since many of us are inclined to overlook the value of this test in making diagnosis of gonorrhea.

There were treated eight patients with gonorrheal rheumatism. The gonococcus fixation test gave a positive result in seven patients; the test was not made in the eighth case; we therefore find one hundred per cent positive reactions. Time of development of rheumatism in relation to the duration of gonorrhea was as follows: In seven of the eight cases, it appeared on the seventh to the twenty-fifth day; the fifteenth day was the average. In the eighth patient there developed rheumatism in the fourth month of gonorrhea, and it was mild. All had acute rheumatic polyarthritis. Six of the eight patients had it in moderate form, but of sufficient intensity to cause swelling, redness and pain in joints, inducing patients to take to bed. These six patients received no oral or local treatment, gonolin only being administered every two days. Two patients were free from rheumatic symptoms at the end of two weeks' treatment with the preparation; one patient discontinued his treatment at the end of two weeks when he was much improved as to his rheumatism, although not entirely rid of it; another patient had similar result at the end of three weeks; fifth patient was much improved at the end of three weeks' treatment and was entirely well (as to his rheumatism) in two months; the sixth patient required two months' continuous treatment before he stopped complaining of rheumatism. This patient had moderate hydrarthrosis in both knees, and he had slight stiffness in both knees at the time his treatment was discontinued. The other two of the eight cases of gonorrheal rheumatism were in exceptionally severe form; they were unable to leave their beds and were in constant pain day and night. In addition to the gonolin they were given large doses of salicylates, alkali and narcotics; also hot applications, lead and opium lotion, blistering, etc. At the end of two months, thirty-one injections of the preparation having been administered to each patient, there was no improvement and the treatment was discontinued. Incidentally, I wish to mention that in one of these patients the urethritis, as revealed by the appearance of his urine, had cleared up; in the other patient the urethritis had subsided, but his first glass of urine contained shreds.

EFFECT ON THE URETHRITIS TWO GLASS TEST

There were three acute cases without complications. One of the patients began treatment two days after onset, with first glass of urine cloudy, second glass clear. He received fourteen injections in a period of thirty-five days, when his first glass was still somewhat cloudy, second glass clear. After a rest from treatment for two weeks, both glasses of urine were again cloudy. He did not continue treatment. The second patient with acute urethritis began treatment eight days after onset, when both the first and second glasses were cloudy. He was given a total of thirty injections in a period of sixty days. After twenty-two injections (six weeks), his second glass was clear. At the end of the seventh week he had no urethral discharge and the first glass of urine was only hazy. At the termination of treatment (two months) his first glass of urine was clear but contained shreds. Five days later both glasses of urine were crystal clear, and he was discharged from the hospital. The third case of acute uncomplicated gonorrhea was in a man who had had gonorrhea four years previously, and it then lasted six and one half months. His present infection developed eleven days before gonolin was administered and both glasses were cloudy. He received twenty injections in a period of thirty-eight days, when he discontinued his treatment while his first glass was still cloudy, but his second glass was clear. There was one case of chronic urethritis of nine months' duration. This patient received eleven treatments in a period of twenty days, when his discharge had disappeared and both glasses of urine had become free from pus, mucus and shreds. After one week's rest from treatment, he returned with urethral discharge and both glasses of urine cloudy, a circumstance not surprising in view of the chronicity of the case and the limited number of treatments. One patient with acute gonorrhea, three weeks' duration, plus acute epididymitis, received seventeen treatments in a period of forty-five days, when his urine was entirely free from pus. He was kept under observation for three weeks longer, during which time he was put through the usual tests, and he was then discharged as cured, having only a nodule in tail of epididymis left as a warning for the future. In twelve of the cases of gonorrheal epididymitis or rheumatism described, an average of twenty-three treatments in forty-seven days were given, and at time treatment was discontinued, their first glass of urine was either cloudy, hazy or slightly hazy, while the second glass was clear. One patient, first infection complicated with epididymitis, six weeks' duration, received twenty injections in thirty-eight days, when his urine still contained a little pus (hazy in appearance) in both first and second glasses. In a similar case the patient received twenty-six in-

jections in eight weeks, when his urine had been rendered clear. But he returned two weeks later with both glasses hazy from pus. I gave one patient forty-four injections, and at the end of three months he still had a moderate urethral discharge and slight dysuria. This was his third infection of gonorrhea, and he was finally found to have multiple urethral strictures and chronic prostatitis. In contrast, I wish to cite the following cases: Chronic gonorrhea of two years' duration. Acute right epididymitis, severe, temperature 103° F. His urethral smear was negative for gonococci, but his blood complement fixation for gonococcus was positive. He received thirteen injections in a period of thirty-two days, and his urine became entirely free from pus. Ten days later, after instrumentation in test for stricture, urethral discharge reappeared, but no gonococci were found in the smear. No further treatment was given, and this case was entirely cured, at the end of ten weeks from the beginning of treatment. Another patient, after twenty-eight injections, had only shreds in first glass of urine, and five days later, after the administration of two more treatments, his urine was clear. Still another patient had his urine crystal clear after thirty-one treatments.

This report contains all the facts about gonolin as far as I know them. My findings are unbiased. It would be interesting to know what results would be obtained if much larger doses were given. As already stated, one c.c. doses have produced no local or systemic reactions, and I feel sure that much larger doses, two to four or five c.c. would be safe to administer every two days. It is possible that this more intensive treatment would bring quicker and more satisfactory results. For the present, considering this a preliminary report, I wish to emphasize the good results obtained in almost all the cases of gonorrheal epididymitis and in seventy-five per cent of the acute gonorrheal polyarthritis cases that received no treatment except gonolin.

SUMMARY

There were twenty-one cases of acute gonorrheal epididymitis. Fourteen of these patients (sixty-seven per cent) were definitely improved in five days average. Six patients were definitely improved in from ten to twenty days. One patient was not helped, and needed surgical interference.

There were eight cases of acute gonorrheal rheumatism; two of these patients were cured in two weeks; one patient was much improved in two weeks; one patient was much improved in three weeks; two patients were cured in two months; two patients were not benefited at all after two months' persistent treatment.

In gonorrheal urethritis the treatment with gonolin did not give the results hoped for, and I thought that we might have gotten better results if larger doses had been given. In only five cases out of a total of twenty-three did I succeed in obtaining a pus free urine at the end of treatment. In the other eighteen cases, there was still some pus in either the first glass of urine or in both the first and second glasses of urine at the time treatment with gonolin was discontinued.

1164 Dean Street.

Mode of Action of Diathermy in Chronic Urethritis.—E. Roucayrol and J. L. Angulo (*Paris médical,* August 8, 1925) adduce evidence to show that diathermy does not act in these cases directly through the effects of heat on the gonococci, but through the production, in the presence of gonococcal toxin, of a marked influx of young and active polymorphonuclear leucocytes which ingest and destroy the germs. If diathermic treatments are continued after disappearance of the gonococci, the phagocytes are no longer present. Before diathermy, smears show only a few, old polynuclears, which have no phagocytic power. Diathermy sets free the gonotoxin, and the heavy influx of young phagocytes can be seen microscopically to ingest the toxin free bacteria. That the heat does not kill the germs directly is indicated by the fact that the staphylococcus, a germ which resists high temperatures, disappears likewise under diathermy. Treatment of chronic gonorrhea with diathermy should be kept up as long as gonococci and discharges of polynuclears are seen in serial smears. When gonococci persist but discharges of polynuclears no longer appear under diathermy, the latter should be discontinued, and later resumed if the gonococci (now free of toxin) are not eliminated by the natural defensive processes. Complete cure can always be obtained ultimately, provided the diathermy is applied in a scientific manner and combined with dilatation. Where discharges of polynuclears are sent to continue in spite of the apparent absence of all germs, the treatment should be kept up, as these discharges prove that germs are actually present, since fresh amounts of stimulating toxins are being set free. Diathermy also possesses, however, the property of bringing deeply situated germs to the surface of the mucous membrane, and for this reason affords an excellent means of diagnosis.

Interscapulothoracic Amputation.—C. Wallace (*British Journal of Surgery,* July, 1925) records the following method of incision for carcinoma of the breast, as one providing sufficient covering for the raw surface left after wide removal. The incision started over the sternomastoid, about three inches above the clavicle, passed down to and over the sternoclavicular articulation; it then turned outwards two inches below the clavicle, crossed about two inches above the angle formed by the junction of the skin of the chest and the arm; then across the deltoid, sloping slightly downwards to the point where the posterior aspect of the arm joined the body; then backwards and downwards almost to the angle of the scapula. From this point it turned forwards, crossed the axilla horizontally below the border of the mamma, and reached the sternal edge, which it followed to the sternoclavicular articulation. By turning the superior flap upwards, it was quite easy to divide the muscles on the superior and vertical border of the scapula and turn forwards the upper extremity and detach it from the thorax. The continuation of this process enabled the arm, scapula, pectoral muscles, and mamma to be removed in one block. The shock was no greater than that encountered in many breast operations. In each case a small part of the anterior edge of the skinflap necrosed, but otherwise the flaps healed well.

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The Normal Infant and Child*

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Almost everything that is said at the present time, both over the radio, in person and in lectures, as well as most of what is written these days about babies and children, pertains to the illnesses from which they suffer and their methods of prevention and treatment. It has seemed to me that if parents knew more about the points that go to make up a normal infant or child, they would not only be spared much anxiety about their own and much envy of their neighbors, but would also be in a much better position to determine whether or not their own were as abnormal as they have been led to believe, when their only guide was comparison with others.

The average weight for the normal baby at birth is seven pounds, and this should be doubled in six months, and trebled at one year, so that when mothers, by comparing their infants with others, feel they are very much underweight, they do not realize that such may not be the case at all; rather the opposite being true, that the other baby is very much overweight, and is, for many reasons, rather to be pitied than congratulated. Few mothers know that the birthweight has so much to do in deciding the average normal weight at six months and at one year, while practically all mothers know that proprietary and patent foods are great weight producers. In spite of this, when comparing the weight of their babies with other babies, they do not stop to inquire the other babies' birthweight, nor whether the other babies were breast fed or bottle fed, and, if bottle fed, whether they were on the great weight producing foods, or on the foods that produce length and strength, increased resistance to disease, increased vitality to help them in convalescing from diseases, better shaped heads, straighter and stronger legs and spines, etc., which conditions are only brought about by the use of either human milk or cow's milk. When cow's milk is used it should always be either certified or pasteurized, and never the milk from one cow, but always from a herd of cows.

All babies should, and most babies can, be raised on human milk, certainly many more can than are, and the next best food for infants is cow's milk properly diluted to meet the needs of the particular patient. While cow's milk is intended for calves and not human beings, it is far superior to proprietary and patent foods in that, while it does not produce the fat baby so desired by the average mother today, it likewise does not produce the cases of rickets and scurvy that so commonly develop on proprietary and patent foods.

In the case of a breast fed baby fruit juices should be started at the fifth month, while in a baby on a bottle they should be started at the third month, thus supplying the mineral salts so necessary for the baby's future welfare, and which are not present in proprietary and patent foods at all, nor in cow's milk to the extent needed, when one considers this milk has to be diluted to meet the requirements of the individual patient.

Mothers frequently ask at what age the bottle should be stopped in the case of a bottle fed baby, and my answer is one year from the time the bottle was started, so that, if a baby was on the breast for six months, and then the bottle was started, it should be stopped at the age of one year and six months, and so on. I believe the use of a bottle for more than one year from the time of starting is one of the three most common causes of enlarged adenoids and tonsils in young children, the other two being thumb sucking and whooping cough.

Another question of importance is the age at which the breast fed baby should be weaned, and also the age at which solid food should be commenced in both a breast fed and bottle fed baby. As to weaning, this should be started at the ninth month by giving a bottle a day, and the next three months, i. e., until the baby is one year old, more and more bottle feedings should be given and less and less breast feedings until, by the time the age of one year is reached, the baby is entirely on the bottle, and entirely off the breast. At this time, i. e., the age of one year, solid food should be started to alternate with the bottle, more and more food, and less and less milk from a bottle being gradually given until at the age of one year and nine months the bottle is stopped entirely. From the fifteenth month on the baby should be en-

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couraged to drink its milk from a cup or glass so that the stopping of the bottle becomes not only an easy matter, but may even be accomplished much earlier than one year and nine months if desired. When it comes to the bottle fed baby, solid food should be started at the ninth month, after which the same procedure should be followed as in the case of the breast fed baby, i. e., more and more food and less and less milk from a bottle being gradually given, until the year is up from the time feeding from the bottle was started, at which time the baby should be entirely on table food.

Parents could learn much from their infants in reference to the taking of nourishment during the warm summer months. While the average adult will drink large quantities of liquids on hot days, only to perspire more freely and feel the heat more intensely as a result, a bottle fed baby will usually refuse a part of the contents of each bottle, much to the baby's credit and comfort, although greatly to the anxiety of the mother.

Another question asked is in reference to preventing the forming, and, when present, the getting rid of gas in the stomach which frequently accompanies and follows feedings, particularly in bottle fed babies. Much can be done to prevent the formation of gas by gently rubbing the infant's back while taking the bottle, and seeing to it that the infant lies on its right side during this time, with its head and shoulders slightly elevated at about the angle it would occupy were it in the mother's arms taking the breast, while, if the gas does form anyway, placing the infant over the mother's shoulder and gently rubbing the back at the same time will usually expel the gas without any trouble. It is sometimes wise for the mother to put the infant over her shoulder before commencing the feeding, and again when part way through, as well as after finishing, and frequently the doing of this before and during the feeding will prevent the necessity of having to do so after finishing, which is a distinct advantage, as it lessens the likelihood of causing vomiting, and obviates waking the infant, if sleeping.

While speaking of vomiting, I would call parents' attention to the fact that by vomiting we physicians mean the return of food that has been in the stomach long enough to become curdled, so that when it comes back it is very thick, looking somewhat like cottage cheese, and has a sour odor. Simply spitting up a little watery fluid soon after finishing a meal is referred to by physicians as regurgitation, and it is important for mothers to learn the difference in the meaning of these two terms, as vomiting almost always requires medical attention to learn the reason why, and remove the cause, while regurgitation frequently acts like a safety valve, getting rid of food that, were it retained, would often cause considerable pain; in other words, regurgitation is frequently the result of taking too much food, taking the food too fast, or the formation of gas before or during the taking, and therefore the prompt return of a small part is a great benefit to the baby, whereas vomiting is rarely from any of these conditions, but is much more likely to be an evidence of improper food, proper food improperly prepared or given, some digestive disturbance, frequently constipation, or the onset of some illness. Concerning the proper preparation and giving of the bottle I would call attention to the fact that I believe it is much better to prepare the food at the time of giving each bottle rather than in the morning for the entire day, especially in summer time, and I am convinced that the holding of the bottle until its contents have all been taken, or at least as much as the baby needs, is one of the most important points in the artificial feeding of infants, and one of the best methods of preventing digestive disturbances. To prop up the end of the bottle on a towel or napkin and go away and leave it, thus shooting the food into the stomach much as the coal is shot into one's cellar, is radically wrong, as the neck of the bottle cannot be kept constantly filled as it should, thus preventing the sucking of air; the regulation of the rapidity with which the contents of the bottle is taken, while valuable, is impossible, and one does not know whether or not the bottle has rolled away and the baby gone to sleep after only a part of its contents has been taken, which would mean it would be awake and hungry before the next feeding time was due. Removing the bottle two or three times during a feeding in order to lessen the rapidity of taking has much to do with the prevention of the formation of gas, and also the regurgitation, or vomiting, or both that may follow, and naturally this is not done if the bottle is left for the baby to take by itself, instead of being held as it should.

Considerable difference of opinion exists as to whether or not a baby should be awakened at feeding time, and, while I realize such should be done if one desires to raise an infant like a machine, i. e., to eat at regular intervals, awake or asleep, need it or not, I personally am not in favor of this being done. I do not believe a hungry baby, or one in pain, will stay asleep; at the same time, I do not believe a baby that is not hungry and not in pain is either going to awaken voluntarily by the clock, nor should it be compelled to do so. As proof of the truth of this I would mention the statement frequently made to me by mothers, that their babies always have a long sleep after the morning bath. This is no doubt in part due to their being tired, but that would not stop them from awakening on schedule time if they were hungry or in pain. One of my principal objections to awakening the sleeping infant in order to feed it is that frequently it is too sleepy to take more than a part of the feeding, and even that only by coaxing, which means it is going to be awake and hungry before the next feeding is due, to say nothing of the fact that food taken only by coaxing and urging is frequently regurgitated, or vomited, or causes some digestive disturbance. I am in favor, therefore, of having a minimum interval between feedings, but no maximum, in other words, decide for the mother how close the feedings may be given, which depends on the age of the patient and the quantity of food in the bottle, and let the baby decide how much further apart the feedings may be, depending upon the time when hunger will awaken it.

To avoid waking the baby up or causing vomiting, or both, it is better that a bottle fed baby should be given the bottle where it is going to do its sleeping after taking the bottle, especially as, when mothers give the bottle with the babies on their laps, they almost always sit in a rocking chair to do so.

Plenty of water should be given to babies, whether breast or bottle fed, between feedings, and most of

their sleeping should be done lying on the abdomen rather than on the back.

Having discussed what the normal baby should weigh, and how the normal baby should be fed, a word might be said as to how the normal baby should be clothed, especially at this time of the year. Just as it is true that more babies cry and suffer from overfeeding than underfeeding, so more cry and suffer from being overclothed than underclothed. Why does not the average mother apply the same principle to the clothing of her baby as she does to herself, which is to put on as little as the law allows, or only as much as the law compels? The baby has just the same right, and probably even greater need, to be scantily clothed as the mother, and, while we could not expect the mother to go bareheaded and barefooted, although I am sure she would do so were it the style, the baby surely should, at least during the summer months.

The average baby should be able to support its own head at four months; sit erect at seven months; stand at ten months; walk with help at one year, and alone at fifteen months. The training of all babies in the use of a chair for bowel movements should be commenced at the third month, so that they should be thoroughly broken to its use by the age of one year. This is not only important from the viewpoint of being a great advantage to the mother, but also means that the baby should at this time be prepared to discard diapers, as the restriction that is caused by diapers in the free movement of the legs in walking undoubtedly favors the development of bow legs even if not of curvature of the spine.

All babies should be vaccinated by the fifth month, in other words, before there is much likelihood of teething beginning, this usually starting in a breast fed baby between the sixth and eighth month, and in a bottle fed baby generally somewhat later, although this is the most variable function of infancy, some being born with teeth, and others not having any until nearly or quite a year old.

Speaking of teething, it is not unusual to hear mothers object to devoting time and money, and perhaps causing a little pain, in the care of children's first teeth, they taking the point of view that, as they are only temporary anyway, there is nothing to be gained by it, whereas, as a matter of fact, the same care should be given the first teeth as the second. One reason for this is keeping the mouth healthy and enabling the proper chewing of the food taken, and a second reason is that the less time that elapses between the shedding of the first teeth and the cutting of the second, the easier will be the cutting of the second, and the more regular will the second set be.

All infants should be given, between their sixth and ninth months, the three injections necessary to protect them from diphtheria, and, in the near future, it is hoped by the medical profession to be in a position to recommend similar treatment for the protection against scarlet fever.

As to children of preschool age, perhaps few things are more important than their environment and their companionship, and, for this reason, an only child, like a fat baby, is to be pitied. The children of preschool age should be encouraged to give free vent to their love of play, especially outdoors, and surely should not be taken to see exciting moving pictures, or allowed to become unduly excited, whether from play or otherwise, between the time of the evening meal and the time of going to bed. The more time they spend with other children and the less time in the company of adults, including the parents, the better.

I wish to sound a note of warning to parents concerning children of school age, and that is that, with the school work and hours as exacting as they are today, I do not believe a child should be encouraged, or even permitted to take up any other studies, such as vocal or instrumental music, etc., at least until high school age is reached, even if then, many of the nervous affections which we have to deal with today in children being, in my judgment, due either to their being allowed to take up some other study because they like it, or encouraged to do so by the parents as a matter of parental pride when their children are compared with others. All hours not needed for school work should be spent out doors, and even the home work from school should be reduced to a minimum, and not done just before the child is to retire for the night.

I would like to say a few words in reference to the value of play for the child of preschool age, and also of school age, not only to the child but also to the parents, especially the mothers. Take a mother of several children, with her multitude of household duties to perform, and think of what a saving of time it would be to her if her children had been taught organized play, and given full freedom to enjoy and practise it. The laughter of children at play is the sweetest of music to the mother's ears, to say nothing of the peace of mind and freedom of action that play on the part of her children would afford her.

Emerson, in *Nutrition and Growth in Children,* says: "There is wonderful training for the powers of the growing child in play. Free play is constructive, and calls into operation the various mental and physical capacities. Children should be encouraged to work out their games in their own way without too close or too constant supervision by adults. In this way they learn to discipline themselves and one another. During the early years interest centres in imitating the activities of older persons, but at the age of seven or eight the spirit of competition develops, and foundations are laid for association and team play.

"In the World War it was shown that the strategy worked out in games was adapted to the serious purpose of war maneuvres. The play of the boy became the work of the man, and some of the best achievements were made by young athletes of trained eye and muscle but with no previous military experience.

"Nothing is more pathetic than the child who has never learned to play. Many of the nervous breakdowns of later life occur because men and women who failed to form the habit of play in childhood pursue their work intensely without recognizing the need for adequate recreation and exercise. The habit of play is a permanent safeguard to health."

Rachford, in *Diseases of Children,* says: "In the modern well appointed home the child too often has some one to do his thinking, some one to minister to his every want and some one to teach or amuse him throughout his waking hours. He has little time to himself and a very small portion of his day is

spent in play with his intellectual equals. Where these conditions exist there is little chance that the best possibilities in the boy will be utilized for making the best possible man." In 1893 I wrote as follows: "If there is one crying evil common to all of our large cities, it is the scarcity of playgrounds for children, and the attention of humanitarians should be called to this fact. If our generous citizens would pause long enough in the building of hospitals, libraries and places of learning to realize there is a field almost totally neglected by the humanitarian and one of quite as much importance to the welfare of our communities, then possibly a portion of the vast sums of money annually spent in this way would be used in providing playgrounds for children. These playgrounds should not be covered with beautiful grass plots guarded by policemen, but they should be playgrounds in the best sense of the word; places where ball, tennis and all kinds of healthful sport could be enjoyed." Since these words were written much has been done in our large cities to furnish playgrounds for children, and a movement is now apparently spreading over the country, hand in hand with the fresh air movement, which is teaching the poor as well as the rich that healthful play in the open air for a portion of the day and healthful sleep in fresh flowing air at night are much more important to the success of the future man and woman than is the number of hours spent in the schoolroom. The day has apparently dawned when the physiological importance of the physical as well as the mental development of children is to be generally recognized, and cities and philanthropical societies will be called upon to furnish like opportunities for the development of both.

Another point on which I have been asked to express an opinion is that of "sparing the rod and spoiling the child," but I hesitate to do this because I feel that the way to correct a well child is exactly the same as the way to treat a sick one, i. e., as an individual, and not as one of many. Just as a physician would not think of treating all sick children the same way, even although suffering with the same disease, so a parent could not and should not be expected to correct a child the same way any other child was corrected, even although what it had done to need correction was just the same thing as the other child had done, because the two children would probably be so entirely different, especially in temperament, that what would be a warning to one not to repeat would be a stimulant to another to do it over again. Of one thing, however, I am quite sure, and that is that whipping is far better than frightening or threatening, such as putting the child in a dark room, or threatening to punish sometime later, instead of doing it right then, or not at all. The following are some of the expressions used by mothers to control their children: "Be good or the doctor will cut your tongue out." "The old man with a black bag picks up little girls who don't mind their mothers." "Steal more jam and I'll whistle for the green eared bogey man in the hall closet." Depriving children of something of which they are fond, particularly some form of pleasure, is one of the safest and best ways to punish, and another good way is to deprive them of something which they like very much to eat, but never of an entire meal, particularly on retiring. After all, to control by love rather than by fear is the ideal method to employ. Many mothers would have much less need to correct their children, and, when necessary, be much more successful in doing it if left to themselves to decide the means to be employed; in other words, it is usually the interference on the part of others, especially well meaning but misguided friends and in-laws, that makes it difficult for many a mother to raise her child properly, and to correct and punish it when necessary in the way that is going to do the most good. More than one mother has expressed to me the fear that she was responsible for some nervous condition from which her child was suffering owing to her having so frequently threatened all kinds of terrible things when the child had transgressed a little from the normal, many of these transgressions being due to the many hours the child was compelled to spend in adult company, when it should have been outdoors playing with other children.

If there are any dont's that I would like to impress upon parents, they would be the three recently used by Dr. I. A. Thom as follows: 1. "Don't bribe." 2. "Don't make promises which you know you cannot or do not intend to keep." 3. "Don't threaten a child in order to obtain control over him." Many parents are very proud of the socalled brightness of their children, especially in the case of an only child, when as a matter of fact it is not brightness at all, but simply an example of the little old man and little old woman ideas the children have gotten from their adult rather than childhood association. In such cases the children are to be pitied, rather than praised or complimented, as they have really had no actual child life at all, the sweetest years of their existence having been spent in mental development, frequently at the expense of the physical, with none of the joys and sweetness of child life to compensate for it. A child is as old as its behavior. By the age of two years in many children the sense of dignity is well developed, and their feelings at this age can be readily hurt by ridicule. It might be well to remind you that between the ages of two years and six years children make their most marked mental and physical development, which is one of the great reasons why the proper training during these years is all important.

While I would be the last one to say a word against education for all children, I am quite sure that many children are compelled to go through high school, and even college, that are neither mentally or physically fitted for such a strain, and would do far better in some line of business where perhaps such advanced education was not required, but for which they would be much better adapted. Of what use is a fine education to mental and physical wrecks, who would probably not only never be able to make use of the education, but frequently will have been so harmed during the time spent in its acquirement that they are not fitted for the active strain of a business or professional life for which they have been so carefully and thoroughly prepared.

This leads me to the last point in my talk, which is the question of whether or not parents should endeavor to influence their children in selecting the kind of work the children most desire to make their vocation in life, and I am quite sure that young men

and young women who have made their own uninfluenced selection do better than those who take up some line of work in which they have no interest and for which they have no natural gift, because of parental influence. Many a father feels his son should follow in his footsteps, and be prepared to take over the ready made business at his father's death, but, unless the young man is so inclined naturally, he will not only do better to follow his own inclinations, but will also make a greater success, and the world will be the better for his having lived in it if he made his own way instead of sitting back and enjoying the fruits of the parent's labors, which meant nothing to him.

You, the unseen audience, may have noted I have referred almost exclusively to mothers, and I do so because it is largely up to them as to whether an infant or child is normal or abnormal. Of course, this should not be, and I hope any fathers who may have been listening in will take the hint to assume more of the responsibility of the bringing up of their offspring in the future than many, if not most, of them have done in the past.

If any of those who have listened to this short talk have learned anything about what goes to make up a normal infant or child, and, equally important, anything about the things to do, and not to do, to keep the normal infant and child from becoming abnormal, your time and mine will have been well spent.

1734 Spruce Street.

Massive Atelectasis (Massive Collapse) of the Lung

With Report of a Case Occurring in an Infant of Three Weeks

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Much interest has of recent years arisen in regard to massive collapse of the lung, as it was named by Pasteur, who first directed attention to it in 1890 (1). It is believed to be a special form of extensive, localized atelectasis, brought on by special conditions. Whether, however, it is to be regarded as a clinical entity, different from other forms of atelectasis, seems to be a matter open to difference of opinion. The object of what follows is, first, to report a case of what appears to be massive atelectasis, interesting on account of the very youthful age of the patient and the peculiar manner in which the collapse probably was produced. Second, to point out the possibility that similar physical signs, as shown by auscultation, percussion and x ray examination, can perhaps be produced in other ways than by the occurrence of this complete collapse.

The case in point is as follows:

Case.—Marie R., born July 21, 1923, about two weeks prematurely. Weight at birth five pounds. There was no asphyxia or cyanosis following the delivery, which was a perfectly normal and easy one. Artificial feeding became necessary soon after birth. I saw her in consultation with Dr. Harry L. Rogers, of Riverton, N. J., on August 7th, on account of loss of weight, diarrhea, rather frequent vomiting, and a decided tendency for the food to be regurgitated through the nose while taking the bottle. There had been no fever and the examination of the lungs had given negative results.

Examination showed a fairly well developed child, weighing four pounds four ounces, but without depression of the fontanelle or any evidence of dehydration, cyanosis or marked debility. Under regulation of the diet the baby improved rapidly and gained a pound in a little less than a week. On August 12th she was admitted to a private room in the Children's Hospital of Philadelphia to be studied for the difficulty in swallowing referred to. There had been no fever or any evidence of pulmonary involvement, and examination of the lungs had shown nothing up to this date.

Physical examination on the day following admission gave surprising results, in that there was discovered impaired percussion resonance over the right side, with distant breath sounds, especially at the base, and a few moist râles. On August 14th there were loud bronchial respiration and bronchophony and numerous fine râles over the whole affected side. Since the12th there had been a trifling cough; the cry had been fair; occasionally there was a slight duskiness, but as a rule the color was good. X ray examination was made on August 14th with the following results: Left lung practically clear; dense shadow throughout the entire right lung, shadow of heart entirely on the right side; a high stand of the diaphragm (Fig. 1).

The child continued to improve rapidly. There were no symptoms whatever indicating trouble with the lung. Regurgitation ceased in a couple of days. Physical examination on the 15th showed lessening in the intensity of the signs, and x ray examination on the 18th diminution in the shadow but with the heart still to the right. By August 20th auscultation and percussion failed to demonstrate any consolidation and the x ray showed the heart and diaphragm returning to the normal position (Fig. 2). The baby was taken home August 21st in excellent shape. While in the hospital she had gained weight rapidly; the temperature had ranged from 97° to 98.8°; the pulse from 118 to 126; and the respiration from 24 to 64 but usually from 34 to 52; that is to say, all three were entirely within normal limits. Letters received one month and two months later reported continued good condition and rapid and steady gain in weight.

The principal features of this case may be summarized as follows: A slightly premature baby, two weeks old, exhibited some indigestion, but no other symptoms except a decided tendency to regurgitation

of food through the nose while taking the bottle. Gained one pound in about a week. Then, without change in symptoms, exhibited extensive consolidation on the right side, with displacement of the heart to, and a high stand of the diaphragm, on this side. There was no alteration of temperature, pulse or respiration, and the general condition improved steadily. About a week later all auscultatory and percussive signs of consolidation had disappeared, and the x ray showed heart returning to normal position. Entire absence of any pulmonary symptoms throughout the disease.

In considering the relationship of this case attention must first be given to the possible existence of ordinary atelectasis of the newborn. Briefly detailed, this is a condition developing in feeble infants; is practically always bilateral, although one lung, usually the left, may be involved more than the other; affects especially the frontal or paravertebral region and particularly the lower lobes, and is patchy in character rather than dense and uniform. The symptoms consist of marked prostration, rapid and feeble pulse, shallow rapid respiration, and dyspnea. The physical signs are usually dullness upon percussion, feeble respiratory murmur and moist râles.

The case here reported had practically nothing in common with this description except the occurrence of prematurity; this being apparently without influence, as indicated by the fact that the infant was rapidly improving at the time the local condition was discovered. Further, the physical signs were those more characteristic of pneumonia, the respiration was in no way affected, the x ray indicated more consolidation than is the rule in ordinary atelectasis, and the disorder was limited to one side. The atelectasis must have been of recent development since examination of the lungs made before the child came to the hospital had revealed nothing abnormal.

Next in order comes the consideration of the so-called massive atelectasis or massive collapse of the lung. All of Pasteur's fifteen cases of his first report occurred in children, and all of them were instances of diphtheritic paralysis in which the muscles of respiration, including the diaphragm, were more or less involved. In all of them there was an accompanying paralysis of the palate and pharynx, and tube feeding was frequently necessary on account of the difficulty in swallowing and the leakage of food into the air passages. It is to be especially noted that in at least one of the two autopsies reported by him in his first publication, there was not only extensive atelectasis of both lungs but evidences of bronchopneumonia as well. In later publications (2) Pasteur extends his discussion to include postoperative collapse. He defines massive collapse as a sudden, complete collapse of a large area of pulmonary tissue, and says it is to be sharply distinguished from the partial form. He thinks that it is always dependent upon a failure of respiratory power, and questions whether obstruction by viscid mucus can ever be a cause. Other observers believe strongly in the influence of obstruction.

Too much has been written upon the subject to allow of any extensive discussion of it at this time, and the reader may be referred to the useful reviews by Abt (3) in reporting a case of a boy of fourteen years, Lee (4) who published the details of five cases, in which the youngest patient was fourteen years old, and Scott (5) who gives an exhaustive review of the subject as seen in postoperative cases.

As Lee points out, the various causes which have been assigned may be placed in two groups: first, those which produce interference with the respiratory movements, and second, those which bring about ob-

Fig. 1

Fig. 2

Fig. 1.—Showing solidification of the right lung, with decreased displacement of the heart to the right and high stand of the diaphragm on this side.

Fig. 2.—Showing disappearance of this collapse and a return of the heart and diaphragm to the normal position.

struction somewhere in the bronchial tree. In the first category is to be placed the action of the diphtheritic paralysis of the respiratory muscles, and the performance of surgical operations especially upon the abdomen. In just what manner such operations occasion collapse has received numerous explanations which are not entirely in accord. It may be concluded, however, that the process is one which, in certain cases at least, in some way limits the respiratory movements. Thus, penetrating wounds of the thoracic wall may be followed by collapse, and this is quite understandable, as is the action of diaphragmatic pleurisy.

Obstruction of the bronchial tree in any part is naturally followed by collapse of the portion of the lung reached by the blocked tubes. Not only may a foreign body produce such an obstruction, but an accumulation of mucus may have exactly similar results. Lee strongly emphasizes this, based upon actual demonstration; and bronchoscopic work has proved its truth. Probably pneumonia, particularly the catarrhal variety, may produce atelectasis as a complication through the closure of certain of the small bronchial tubes. Certainly atelectasis is a frequent complication of this disease, especially in infants. It is likely that many cases of massive collapse brought about apparently by diverse causes are in reality dependent upon plugging of the bronchial tubes with mucus.

The symptoms of massive atelectasis vary considerably. The onset may be sudden and severe; but the constitutional manifestations are usually mild, consisting of cough and moderate, if any, elevation of temperature, while the respiratory rate may or may not be increased. Physical examination shows dimin-

ished expansion of the affected side, if but one is involved, dullness on percussion, and usually an increase of vocal resonance with loud bronchial respiration. Even in the cases where the respiration is feeble, a bronchial character can be detected. The heart is displaced toward the affected side, but this may not always be discoverable on percussion, owing to possible emphysematous distention of the adjacent edges of the lung. The ultimate diagnosis is believed to rest upon the radiographic appearance, especially when the lesion is on the right side. It is stated to depend upon the triad of collapse of the lung, cardiac displacement to the affected side, and a high stand of the diaphragm on this side. The differential diagnosis from pneumonia, which is the disease most likely to be thought of, rests upon the mildness of the general symptoms as compared with those of the latter disease, the presence of some one of the ordinary exciting causes usually operative, and the x ray data mentioned.

The question arises whether the case now reported fits into the category of massive atelectasis of the lung. Against it stands the early age of the patient and the apparent absence of any discoverable cause for a unilateral active atelectasis. As to the symptoms and physical signs, the extensive consolidation or condensation of the lung, combined with the excellent general condition and the absence of fever, casts doubt upon the original diagnosis of pneumonia, in spite of the fact that the physical signs strongly indicated the presence of this. The x ray examination appeared to be conclusive. As regards the existence of a possible cause in this case it is to be noted that one of the chief symptoms was the unusual interference with the swallowing of food as detailed. This difficulty, as stated, consisted chiefly in regurgitation of milk through the nose when the infant was taking the bottle. The thought arises that there existed here a deficient action of the palate and that very possibly, as a result of the regurgitation, some food may have entered the right bronchus and, through the irritation produced, secretion of viscid mucus and a blocking of the bronchus may have taken place. There is, of course, no proof of the truth of this explanation, but it would appear to be at least a very natural and probable one.

There is a third condition to be considered which, it is true, throws no doubt upon the occurrence of massive atelectasis as a pathological condition, but does indicate a possibility that similar physical signs and especially x ray findings may, particularly in childhood, be dependent upon pneumonia, existing alone or combined with atelectasis; perhaps the one condition or perhaps the other predominating, and either being primary or secondary in development. That pneumonia could produce x ray and other signs of the nature discovered is by no means a new idea so far as adults are concerned, although the occurrence would seem to be a very rare one. Hofbauer (6) refers to displacement of the mediastinum occasioned by unilateral pulmonary infiltration, as a result of the diminished entrance of air into the affected lung; and refers to a similar statement of Curschmann (7). It would appear probable that the condition may occur much more frequently in children and especially in infancy.

Of particular import in this connection is the interesting contribution by Thoenes (8) on Mediastinal Displacement in Infiltrative Disease of the Lungs in Infancy. This writer details eleven cases, in all of which there were clinical evidences of pneumonia infiltration predominatingly, or only, of one lung, and in which an x ray examination showed more or less displacement of the heart to the affected side. The diagnosis of pneumonia was confirmed in four autopsies, in one of which the infiltration was extensive. Atelectasis, too, was found in all, the degree varying with the case. These subjects were all young infants from seventeen days to thirteen months of age, most of them exhibiting varying degrees of malnutrition; but some apparently healthy and thriving when the disease developed. He is of the opinion that both pneumonia and atelectasis were factors in the production of the displacement of the heart and mediastinum; this displacement being aided by the compensatory overdistention of the unaffected lung with air, and more especially by the poor development of elastic fibres characteristic of the lung at an early age. It is evident that a lung largely consolidated by pneumonic infiltration is incapacitated from a satisfactory inflation during respiration, and that displacement of the heart may be a natural result just as it would be in atelectasis.

Thoenes's conclusions are largely supported by the observations of Wallgren (9). This writer has observed a considerable number of cases of pneumonia with displacement of the heart to the affected side. Of these he reports eight in detail with x ray illustrations. He believes that the condition is probably much more frequent in early life, especially in the first year, than these figures indicate. The age of the patients reported varied from two and a half months to nine years. All of them appeared clinically to be perfectly clear cases of acute unilateral pneumonia developing in subjects in good or very fair general health. He believes, further, that a complicating atelectasis in the pneumonic lung adds to the diminished expansion of the affected side and the cardiac displacement which results, but he considers that the pressure of the other lung through its compensatory dilatation is the principal factor.

Here, too, may be mentioned the statement of St. Engel (10) who, in presenting an x ray picture of a rightsided pneumonia, points out that a high stand of the diaphragm on the affected side is of common occurrence in inflammatory conditions of the lower lobe, being dependent upon diminution in the size of the lung through a reflex interference with respiration upon this side.

CONCLUSIONS

Several conclusions seem justifiable:

1. The case here described is probably best assigned to the category of massive atelectasis of the lung, probably in this instance the result of a blocking of a bronchus by liquid food and viscid mucus. The diagnosis might, however, not be entirely justifiable based solely on the x ray appearances, but is so justified when these are combined with the absence of all ordinary symptoms of pneumonia.

2. In view of the extensive difference of opinion regarding the pathogenesis, and because, further, the employment of the terminology "massive collapse" might be taken to denote a separate clinical entity—

as in fact is done—it would seem preferable to call the condition massive atelectasis, as has been repeatedly proposed. In this event the disease is to be considered only a variety of atelectasis differing from other forms merely in degree and to some extent in the method of its production.

3. There is not the slightest doubt that the x ray appearances are of the greatest value in the making of a diagnosis of massive atelectasis of the lung, and that the diagnosis cannot be made with certainty without such examination. Yet, if the observations reported are correct—and it is hardly possible that they are all erroneous—it would seem that pneumonia may at times be capable of producing similar, if not, perhaps, so marked x ray appearances as are seen in massive atelectasis, and that the clinical symptoms must be given serious consideration. To how great a degree a complicating atelectasis may be responsible for this cannot be determined in the present state of our knowledge; especially in view of the fact that pneumonia, particularly when of the catarrhal form and occurring in young children, is liable to be accompanied by atelectatic patches in the diseased lung.

It may be stated in this connection that some investigations are now being conducted in the Children's Hospital, of Philadelphia, which, as far as they have gone as yet, would seem to support the view that the displacement of the heart to the affected side may occasionally be observed in pneumonia, without clinical evidence of atelectasis. Should further studies confirm this, the results will be published later.

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The Difficulties of Maternal Nursing

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We are all familiar with the enormous advantages of maternal nursing over bottle feeding of infants. Suffice it, therefore, merely to reiterate the fully established observations, that breast milk is a highly nutritious, ideal infant food, destined by nature alike for the poor and the rich, the weak and the strong baby under ten months of age. It has the marvelous and most convenient qualities of requiring neither sterilization, pasteurization, nor even warming, and is ever ready for immediate use at all times of the day and night, at all seasons of the year and in all climes of the world. Yet, like so many other blessed things on earth, breast milk has its limitations in bountifulness, and occasionally presents great difficulties, even when exact laboratory tests prove that its composition is apparently absolutely normal—thus tending to show that in some instances breast milk possesses chemical or biological constituents which in some infants evolve anaphylactic phenomena, rendering the milk unfit for consumption.

In times bygone, when women led a more natural, simple life, and their vitality was not sapped by the extravagances of extreme wealth and the frivolities of society, or the abject misery of extreme poverty of the city slums, practically every woman was endowed with the facility to suckle her babe. But, alas, times have changed and we have changed with them; and do what you will, the greatest majority of the mothers of large cities of today are unable, even if willing, to nurse their babies —the threadbare assertions of the many well meaning health and welfare societies to the contrary, notwithstanding.

I vividly recall the time, when (frequently to the great detriment of the babies' health and, by the way, of my shrunken purse) I also had the fixed idea that I could change the course of modern life; when, following the precepts of my teachers and textbooks, I stubbornly insisted that every mother could and must nurse her offspring. Many a mother have I fattened almost to the bursting point and many others thinned to mere skeletons, hoping by these means to enable them to keep their babies at their breasts, but my efforts only too often proved dismal failures. Finally, after many years of study and close observation, I have come to the conclusion that there are three types of nursing mothers, namely: one group that can nurse her babies, and either does it or does not do it, to suit her own convenience; another group that can not, but is anxious to do so, and a third group of mothers, who could suckle their infants, at least partially, if properly guided by their family physician, before and after the birth of the child.

The first group of mothers comprises mainly the foreign born women of little or moderate financial means. Already as young girls, the fact is firmly impressed upon their minds that maternal nursing goes hand in hand with blessed maternity. It matters little whether or not they have enough to eat or to drink; whether they rest or work, and whether they everlastingly quarrel with their husbands, mothers-in-law or neighbors, or are as placid as

tame kittens—their milk supply is ever plentiful and their babies get prizes on exhibitions. Those of us who are associated with clinics of the slums are often surprised to note how some frail, emaciated little woman has milk enough readily to feed twins, even though her breasts hang down loosely like empty, shriveled up bags—differing very materially from those of the classical Madonna so often stressed upon in our text books as the primary prerequisite in the selection of a wet nurse. In this connection it may be of interest to observe that some of these mothers nurse their offspring not only as a duty to their children, but as a great pleasure to themselves, the manipulation of their breasts during suckling creating in them a sort of sexual gratification. Indeed, I can recall quite a few of the somewhat erotic women who, contrary to my advice, kept on putting their babies to the breasts at short intervals, in order to satisfy their libido; and there is justification for the suspicion that, for the very same reasons, some mothers prolong nursing until their babies are fully capable of partaking a square meal.

In strong contrast to this group of primitive mothers, we meet with another group that embraces the product of our modern civilization, the socalled intelligentsia—with or without genuine sense or knowledge. These women generally measure up to the highest standard of motherhood, as regards duty or sacrifice for their children. Indeed, long before marriage, their thoughts already dwell upon the sacred duties of maternity, and long before pregnancy, they are often engaged in the study of books, scientific or otherwise, on the best methods of rearing ideal infants. Their first thoughts after parturition are concentrated upon their duty to nurse their offspring. They are prepared for sacrifices—to diet, to lose their figure, to give up their pleasures of society and all—in order to aid nature to secrete the vital breast milk, but, unfortunately, the more they sacrifice, the less they succeed. Their intelligence, their hypersensitiveness and their extraordinary anxiety, all combine to thwart their supreme efforts. Encouraged by their conscientious family physician, they try again and again to attain their goal; they coax, indeed, harass, their babies to suck on the fountain of life, disregarding painful, often cracked, nipples and general debility or disease. But, try as you may, the breasts remain as dry as the wild wastes of Sahara—in the everlasting conflict between artificial civilization and crude nature, the latter usually triumphs and cruelly exacts from the former its full penalty with a vengeance.

We are now coming to the third group of mothers, who, though by nature destined to nurse their babies, fail to do so because of the uncanny imposition, especially upon young and inexperienced mothers, of a large number of traditional hard and fast rules and regulations that hinder and impair the normal functions of the breast and nipples. Barely has the mother emerged from the painful ordeal of parturition, when from all sides commands arrive, to fill her up to the brim with excessive quantities of milk, gruels, cream, eggnogs, soups, beer and what not, regardless of her appetite or powers of assimilation of the food. As a result of this forced feeding, we often meet with the following serious consequences: Sudden plethora of milk or undue rise in its percentage of fat, in both events producing indigestion in the infant, and, furthermore, causing caking of the breasts and biliary disturbances in the mother. In fact, there is good reason for the belief that the quite common occurrence of cholecystitis and gallstones in mothers soon after parturition is often the direct result of the aforementioned method of overtaxing their digestive organs. Another error that is generally committed, especially in maternity hospitals, is the enforcement of a preposterous standing rule, like clock work, to put the baby to the mother's breast regularly every three or four hours during the day and night, exactly for twenty minutes at a time—irrespective of the comfort or discomfort of the mother and the inherent disposition and vital capacity of the baby. This redtape army regulation only too often leads, on the one hand, to painful and cracked nipples and possibly subsequent breast abscess in the mother, and, on the other hand, to dyspepsia, insomnia and excessive irritability in the baby. Indeed, I have often wondered whether the latter condition does not act as the primary cause of spasmodic pylorus stenosis, since, contrary to what is generally expected, this affection usually predominates in breast fed babies.

Having thus surveyed the vicious forces that militate against natural maternal nursing, I shall now endeavor to offer a few practical suggestions, which may help to minimize, if not wholly to eliminate, the difficulties. First of all let me emphasize the fact that, with our present knowledge of sanitation, the strict supervision of the milk supply by the departments of health, as well as by the medical societies and, finally, the facility with which every mother can modify the baby's food at home in accord with her doctor's directions, millions of babies are nowadays as successfully reared on cows' milk as on human milk. The view frequently expressed by breast milk fanatics that breast babies are less susceptible to contagious diseases than bottle babies is, to say the least, a gross exaggeration of but a scintilla of truth. We all know that practically the majority of infants under six months of age are more or less immune towards infectious diseases; and, taking, for instance, one disease (pertussis) as an index, I had occasion to observe and to report (1) more cases of whooping cough in the newly born and young breast fed infants than in the bottle fed. Now, the statements here made are not intended to convey the impression that maternal nursing is to be abandoned, nay condemned—quite the contrary! Maternal nursing is the ideal, the most convenient feeding for babies, and, under favorable conditions, should by all means be fostered and urged upon mothers as a bounden duty towards their offspring. But, when it is a question of making cows out of women, when it is a question of giving them all sorts of trouble, of disturbing the peace, comfort and serenity of a home and the family by a spasmodic colic baby that keeps wife and husband, kin and neighbor in a state of uproar day and night, then, by all means, give the baby cow's milk, bottle and nipple and all. We must ever bear in mind the fact that every mother is a separate unit with special inherent as well as acquired characteristics

that cannot be remodeled at will to suit special occasions. And, if any molding to become a model wet nurse is to be done at all, it must be started long before the baby is born. The prospective mother must be assured that pregnancy, parturition and nursing of the baby are natural, physiological processes, ordinarily devoid of perilous complications or sequelæ. During the later stages of pregnancy, she must be put in the most healthful physical and mental condition, free from the anxieties of the struggle for a livelihood, as well as from the nerve wrecking and tantalizing allurements of a luxurious and frivolous life. Towards the end of pregnancy the nipples should be hardened by means of hot boric acid solutions and glycerite of tannin. If necessary, the nipples should be stimulated in their development by gentle massage and traction with the fingers or breast pump.

Except where surgical interference is anticipated (such as abnormal positions of the baby, narrowness or other deformities of the pelvis, placenta previa and the like), the patient should preferably be delivered at home, rather than in a hospital, provided, of course, the patient lives in a modern clean apartment or house and can afford the services of a good nurse who is capable successfully to meet emergencies. The objections to the hospital are mainly the facts that the great majority of good women are loath to separate from their homes and husbands and possibly other children, and that the very idea of going to a hospital has a depressing effect upon them. Furthermore, when there, they are often disturbed by the sufferings of other patients, by the odors of anesthetics and antiseptics, etc., and, last but not least, in the hospital they, as well as their babies, are more exposed to infections, which directly or indirectly interfere with proper maternal nursing. Heaven forgive me for whispering that I have seen many a mother with infected breasts and many a baby with general furunculosis or impetigo who contracted the infections in some of the best regulated maternal hospitals of our great city.

After the mother has fully recovered from the shock of accouchement, and both she and her baby are in a normal condition, it is advantageous to put the infant in her room, instead of in the remote, generally overheated and poorly ventilated nursery, in order to afford the mother the exhilarating joy of watching the wonderful creation of nature through the medium of her personality. This preoccupation generally diverts her mind from the numerous physical or mental disturbances that are associated with postpartum.

As already suggested, overfeeding of the mother is sternly to be avoided. During the first three days after delivery, she may receive in twenty-four hours one quart of milk with cereals or toasted bread in addition to vegetable broths, stewed fruits and a small portion of chicken or lamb for dinner and one egg for supper. The diet thereafter should gradually be varied, so that by the time she is out of bed she may enjoy the meals she was generally accustomed to. The obsolete tradition that mothers' milk is improved by "slush" and deteriorated by a good substantial diet is as preposterous as the other—often for nurses and physicians very convenient—ancient heirloom, that breast abscess is the result of a socalled cold.

After gentle sponging of the baby's mouth and its mother's nipples by means of absorbent cotton dipped in warm boric acid solutions, the infant should be put to the breast about twelve hours after delivery, in the meantime administering every four hours a few ounces of water with or without a pinch of cane sugar. It should nurse on one breast only, from five to ten minutes at a time, every three or four hours, when awake. When sound asleep and prefectly comfortable, it should not be awakened at specified intervals, to suit the conveniences of the nursery authorities. If the mother's milk supply is scanty and the baby is hungry, it may receive as an additional food immediately after nursing one or two drams of milk in one ounce of water, preferably through a bottle and nipple, in order to accustom the baby to proper sucking. Whenever the mother's nipples are hypersensitive or underdeveloped, or show a tendency to crack or bleed, an ordinary glass nipple shield will be found a grateful temporary substitute for the mother's nipples.

About one week postpartum an inventory, as it were, should be taken of the mother's milk supply. This is best determined by weighing the baby before and fifteen minutes after nursing, the gain in weight indicating the approximate milk content of the breast. Also, with a fair degree of experience, one can readily gauge the quantity of the milk by "stripping" the breasts, i.e., gently grasping the breast at the pigmented areola with thumb and index finger and, with gentle pressure, repeatedly move the fingers toward the end of the nipples. With normally secreting breasts, these manipulations produce several jets of milk which spurt freely and distantly in all directions. Sometimes this is only accomplished after the baby had already been sucking for a minute or two, i. e., after the flow of milk had fully started. The quality of the milk can usually be determined by laboratory tests and by the appearance of the stools. Excess of fat, which is the most disturbing element in breast milk feeding, is readily detected by an oily appearance of the stools, with small white lumps resembling bits of cream cheese. If the breast milk agrees with the baby, we generally find that the baby suckles peacefully for about ten minutes and falls asleep at the breast. Otherwise, it usually squirms and belches uncomfortably, off and on drops and grasps the nipples and, as it were, digs into the breasts, and is not fully content, even after lying at the breast half an hour or longer. As a rule, the mother interprets this action of a baby as a sure sign of not getting enough milk, hence keeps it at the breasts, sometimes even for an hour at a stretch, of course, without benefit to the baby, but to the detriment of her nipples and her general health. As a matter of fact, however, this behavior of the baby may be due either to an excess of milk as a whole or to its fat content only. In either event the trouble is readily remedied by recommending to supplement a whole milk formula, in addition to ten minutes nursing, in case of insufficiency of milk; and a skimmed milk formula, after five minutes nursing, where the milk is too rich. The formula is prepared

as usually, in accord with the age of the infants, the amount varying with their natural propensity and appetite—some of them drinking only part of the mixture, and others again voraciously emptying the whole amount prepared for them. In this manner we are usually able to continue maternal nursing to the great benefit of both mother and child, often until weaning time. Failing, however, to obtain satisfactory results with the aforementioned procedures, we generally withhold the breast milk entirely for from twenty-four to forty-eight hours, resort to bottle feeding, and watch the effect. If the cows' milk mixture fully agrees with the baby, while resumption of breast feeding recreates the same discomfort, restlessness, colic or vomiting, I do not at all hesitate to discontinue breast feeding entirely. After doing so I almost invariably find that the babies thrive beautifully on well chosen cows' milk formulas; furthermore, that the mothers' breasts require no remedial measures to arrest their secretion of milk—thus proving conclusively that the breasts were kept barely alive artificially by forced feeding, and would not have lasted long at best.

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Congenital Malformations of the Rectum and Anus*

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According to statistics, Bodenhamer in 1860, in an extensive and exhaustive report, showed that anorectal malformations are present in one in every ten thousand infants. Those with abnormal openings into the bowel live and in time are brought to the hospital or the physician because the condition is a puzzling one. Complete imperforation of the anus or rectum causes death in a few days unless relieved.

The rarity of the condition prompts me to present the following cases that I have seen recently:

Case I.—Baby B. H., male, fourteen months old, was referred to me by Dr. S. C. G., June 16, 1922. The history given to me was that the child was born without an anus. This was probed when the child was twenty-four hours old, since which time the child dribbled some fluid fecal matter from the probed opening, and some fecal discharge was also seen to pass through another opening situated anteriorly and near the scrotum.

The child never had an abscess, or a discharge of pus from the anus or perineal parts. The anus and perineum became raw and excoriated, the child had three to four fluid evacuations a day, some days—and at other times must have cathartics or he became greatly distended.

Examination revealed an apparently healthy child, well formed and well nourished—rectal inspection showed the presence of a fold of skin obstructing the opening of the anus, and extending anteriorly to the scrotum; underneath this fold of skin near the scrotum there appeared tracts simulating fistulous canals on probing, but which were filled with fecal particles.

The following day, June 17, 1922, under the influence of one half per cent. of novocaine as a local anesthetic, I excised the folds of skin, by incision and trimming of the skin edges, eliminated what appeared to be the fistulous tracts; and on getting to the anus found a congenital narrowing of the anus and rectum. I split the anus and rectum posteriorly, trimmed the edges the same as I would do in a fissure operation, and sent the child home the same evening. For the first time since birth the child had satisfactory and formed movements. The child was brought to me for treatment and dilatation of the anus and rectum for about eight weeks.

However, I advised the parents that it might become necessary to enlarge the opening or do some plastic work on the anus when the child became older. On May 13, 1923, eleven months later, again with one half per cent. novocaine as a local anesthetic, I operated on the child. A contraction had formed which made it difficult for the child to move its bowels, and by splitting the sphincter muscle, and with slight plastic work, the child now has a useful anus and rectum, moves its bowels regularly every day, and has made an uneventful recovery.

Case II.—Baby H. J., female, five weeks old, was referred to me by Dr. I. F., June 12, 1924. The parents said that the child cried at every attempt at evacuation, and that to them it seemed that there was something abnormal about the anus; there was no blood with stool, and the child seemed healthy but cried at every attempt at a bowel movement.

Examination revealed a distinct occlusion of the anus by a transverse fold of skin, which also projected backward to about the location just over the tip of the coccyx.

Under local anesthesia of one half per cent. novocaine I excised the fold of skin, split the anus posteriorly, and found the narrowing of the anus for a distance of about one and a half inches and allowed the posterior slit to heal by granulation. The child was sent home from the hospital the same evening, and was brought to me for treatment about twice a week for six weeks for dilatation, and had been having very well formed movements for about four months, when again some difficulty or contraction was noticed.

November 22, 1924, five and a half months later, due to this contraction having formed, it became necessary to do a slight plastic operation, after having removed the scarred and thickened tissue as in the preceding case. Up to date the child is well, and is brought to me for examination once a month.

*Presented before the American Proctologic Society, Atlantic City, May 25, 1925.

Case III.—Baby R. W., female, four and a half months old, was referred to me by Dr. W. F. P., November 18, 1924. This was the mother's first and only child which felt well until six days ago when the child began to cry, the stomach became distended, and the child was straining at stool as if she wanted to move her bowels—but the child never passed more than discolored fluid. The young mother in desperation, not knowing what to do, asked her mother what should be done, and she was advised to give the child an enema. She prepared the solution, and when she tried to give the enema, couldn't find a place to insert the enema tip, and as the mother expresses it, "when she looked at the rectum it didn't look right." Previous to this experience the child had had fluid movements three times a day, which the mother thought was normal—she knew no different.

The mother became frightened, took the child to her family physician who referred her to a pediatrist, and then the pediatrist referred her to me. After a three and a half hour trip from New Jersey, she arrived at my office, the child continuously crying, the belly distended, the legs flexed, and bent upon the abdomen, beads of perspiration on the child's head and severely straining.

Examination revealed a pin point opening where the anus should have been, and I could with difficulty insert an extremely fine probe.

I felt there was no time to lose to send the child to the hospital, and in my office under the influence of one half per cent. novocaine as a local anesthetic, I injected the parts, and dissected down posterially toward the coccyx, then upward and found an extremely contracted tubular anus and rectum for a distance of about one and a half inches, which consisted of dense, tough fibrous tissue which I removed. I split the sphincter muscle. The child expelled an enormous amount of hard fecal matter, and manually I was able to break up and remove the rest of the rectal contents—the child relaxed; distention and straining were relieved—I did a perineal excision of the entire fibrous mass, drew down the healthy rectum and sutured it to the skin, applied a sterile dressing and sent the child home. After eight weeks of treatment the child made an uneventful recovery, and has a perfectly useful anus and rectum.

These cases are interesting, not only on account of their rarity, but also because of the prompt relief that can be given in them without any untoward results under the influence of local anesthesia.

A fourth case was omitted for lack of space. It will be included in the reprints.

Corn Meal in Infant Food Modifications

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The first solid food added to the milk modifications in the infants' dietary is the cereal given from about the fourth month on, depending upon the individual infant. The selection and proper preparation of this cereal is in consequence a matter of great consideration. For in the selection of this cereal for the individual infant the burdens, perplexities and worries of the first year may be appreciably lightened. At present grains are generally used for their high carbohydrate valuation. Carbohydrates yield the most important oxidizing material with the least expenditure of effort on the part of the growing child. They are biologically economical on account of their complete utilization and because the energy required for digestion is much lower than for the fats and proteins. Carbohydrates are nitrogen retentive and aid in the digestion and assimilation of these fats and proteins. They have a water retentive value especially noticeable in those cases of marked malnutrition in which there is a dehydration as well as a loss of salts. This is made manifest by the smaller amount of urine excreted during cereal gruel feedings than when no cereal is used, although the fluid intake is the same (1).

Cereals in general may be grouped into three classes, 1, the oat group; 2, the wheat group; 3, the maize group. The oat group, says Chamberlain, stands at one end as typical muscle or energy producing food, while the maize group brings up the other end as fat and heat producing (2). In cereal grains, while starch is practically the only carbohydrate present, some sugar is contained in them in small quantity, except in sweet corn and in sorghums where it is found in large amount (2). Besides carbohydrates, fats, mineral matter, phosphorus for example, although the grains are deficient in calcium, and a certain proportion of water, there are also present grain proteins. These proteins vary much in kind in the different cereals and their value as tissue formers varies also. Small quantities of other nitrogenous substances exist called anides. The proportion of fat varies in different members of the cereal group and is most abundant in the cereals of northern latitudes but are almost absent in the cereals of the tropics (3). The general composition of cereals is practically as follows:

	Percentage
Water	10-12
Proteins	10-12
Carbohydrates	65-75
Fat	½- 8
Mineral matter	½- 8 (3)

Furthermore, cereal grains in relation to their nutritional contents may be roughly divided into two general groups, the one typified by oats or wheat, high in protein and relatively low in carbohydrates, the other typified by maize relatively low in protein but rich in carbohydrates and is moreover of great nutritive value (2). Oats and corn are two distinctly different cereals and the differences in the amount of nutritive constituents are considerable. On the other hand, the cereals rye and wheat are very similar and show but slight differences in the amounts

of their nutritive constituents (2). While corn, wheat, rice and oats form a large group of foods that contain a large amount of starch and an amount of protein at least above the average for food materials in common use, of them all corn preparations are among the most economical of our common foods (4). Chemical analysis shows that maize is quite as nutritious as wheat except in mineral constituents, richer in fat than any cereal except oats, containing twice as much as wheat or barley and three times as much as rye. In nitrogenous matter corn products are slightly inferior to most of the other cereals and its carbohydrates are equal to wheat but somewhat inferior to those of rye and barley in digestibility (3). While it is true, says Chamberlain, that the amount of productive energy in one hundred pounds of maize is greater than in an equal amount of oats (some 23,000 calories) or that because one hundred pounds of maize will produce an increase in flesh five and a half pounds greater than can be produced with an equal weight of oats, is maize to be considered more valuable than oats? Or again, because the nutritive value of oats is four to seven per cent. lower than that of maize are oats consequently of less value? (2) However, be that all as it may, the following list of the average composition of corn and corn products shows the great value of this cereal as food (5).

AVERAGE COMPOSITION OF CORN AND CORN MEAL PRODUCTS

	Water, p. c.	*Protein p. c.*	*Fat, p. c.*	*Starch, p. c.*	*Crude fibre, p. c.*	*Mineral matters p. c.*	*Fuel value per pound—calories*
Corn—whole grain—average	10-8	10-0	4-3	71-7	1-7	1-5	1-795
Corn—white	11-4	10-8	5-0	68-8	2-5	1-5	1-690
Corn—yellow	11-9	10-7	4-8	68-9	2-2	1-5	1-690
Cornmeal (whole grain, ground, unbolted)	12-0	8-7	4-7	71-11	2-2	1-3	1-850
Cornmeal (whole grain, ground, bolted)	12-0	8-9	4-9	72-0	1-2	1-0	1-765
Cornmeal (granulated, new process)	12-5	9-2	1-9	74-4	1-0	1-0	1-770
Corn flour (meaning finely ground and bolted cornmeal)	12-6	7-1	1-3	77-5	-9	-6	1-645

All biological research workers speak of the high nutritive value of corn products; many speak of their superiority over other cereals in this respect; while many more speak of their energy value as higher than found in other cereals. Maize contains several proteins and under certain conditions corn products are of more intrinsic value than meat for their proteins are well and thoroughly utilized. Malfatti according to Mendel and Fine found that the digestibility of maize was eighty-two per cent. (6). The following biological research work by Mendel (7) and by McCollom (8) will, I believe, show the great value of corn and its products at least in animal experimentation.

Mendel writes in part of this interesting animal experimentation: Theoretically he says it has seemed easily possible (for some physicians) to construct a balanced ration largely on the basis of analytical data expressed in grams of digestible proteins, carbohydrates, fats and inorganic salts, and in total calories of metabolizable foodstuffs. An elaborate investigation begun about fifteen years ago at the Wisconsin Agricultural Experiment Station showed in a most striking way that there are physiological values to a ration not measurable by the current chemical methods or dependent upon mere supply of available energy. Comparisons were made of the effect rations balanced from corn, oat and wheat plants respectively had upon growth and reproduction in cattle. Rations restricted to the corn plant were highly successful for both growth and reproduction, while rations restricted to the wheat plant were disastrous to successful growth and reproduction. The tests with a ration made from the oat plant indicated at that time (1911) that it was not possible to make a highly successful ration from rolled oats and oat straw.

McCollom, speaking along the same lines, has summarized some interesting tests. The object was to determine whether rations for cattle so made up as to be alike in so far as could be determined by chemical analysis, but derived each from a single plant, would prove to be of equal nutritive value for growth and the maintenance of vigor. The ration employed for one group of animals was derived solely from the wheat plant and consisted of wheat straw, wheat gluten and the entire wheat grain. The ration of a second group consisted of the entire corn plant which included the kernel, stalk and the leaf together with a portion of corn gluten, a byproduct of the corn starch industry.

The third group obtained their ration solely from the oat plant, being fed entirely on rolled oats and oat straw and leaf. There was a fourth group which it was supposed would serve as controls, that was fed a ration having the same chemical composition but derived from about equal portions of wheat, corn and oat products. The animals employed were young heifer calves weighing about 350 pounds, and were as nearly comparable in size and vigor as could be secured. They were restricted absolutely to the experimental ration. They were given all the salt (sodium chloride) they cared to eat, were well cared for and were allowed to exercise in an open lot free from vegetation. Their behavior during growth and during the performance of the function of reproduction was extremely interesting. All groups ate practically the same amounts of feed, and digestion tests showed that there were no differences in the digestibility of the three rations. It was not until the animals had been confined to the experimental rations for a year or more that differentiation in their appearance was easily observable. The corn fed group was sleek and fine and evidently in an excellent state of nutrition. In marked contrast stood the wheat fed group. These animals were rough coated and gaunt in appearance and small of girth as compared with those fed the cornplant ration. The weights of the two groups did not differ in a significant degree. The groups fed the oatplant ration and the mixture of the three plants, leaf and seed stood intermediate between the lots just described. The assumption that the animals receiving the mixture of products would fare better than the others and thus serve as the standard group of controls did not prove correct. The cornfed animals were at all times in a better state of nutrition than were those receiving the greater variety of food materials.

The reproduction records of these animals are also of special interest. The cornfed heifers invariably carried their young to full term. The young showed remarkable vigor and were normal in size and able

to stand and suck within an hour after birth, as is the rule with vigorous calves. All lived and developed in a normal manner. The young of the wheatfed mothers were the reverse in all respects. They were born three to four weeks too soon and were small, weighing on an average forty-six pounds, whereas the young of the cornfed animals weighed seventy-three to seventy-five pounds each. The latter weight is normal for newborn calves. The young of the wheatfed mothers were either dead when born or died within a few hours. The young of the mothers which had grown up on the oatplant ration were almost as large as those from the cornfed mothers, the average weight being seventy-one pounds. All of the cows in this group produced their young about two weeks too soon, one of the four was born dead, two were very weak and died within a day or two after birth, the fourth was weak but with care it was kept alive. The young of the cows which were fed the mixture of the three plant products were weak in most cases. One was born dead and one lived but six days. The mothers were continued on the experimental rations and the following year they repeated in all essential details the reproduction records observed in the first gestation periods. The observation was made that the urine of the wheatfed animals was invariably distinctly acid in reaction whereas that of the other lots was alkaline or neutral. It was not possible by any means known to biological chemistry to work out a reason as to the cause of the pronounced differences in the physiological wellbeing of the different lots of cows.

The importance of the proper grinding of the coarse corn is a great one. The fineness of grinding and the removal of the coarse parts of the skin or bran makes some difference in the digestibility. The amount of the germ and of the skin removed when corn is milled affects its food value as well as its appearance, flavor and keeping quality. When the germ is removed most of the fat and all of the vitamine A go with it, whereas when the skin is removed the meal contains less cellulose and a little less protein, less mineral substances and less vitamine B. The stone grinding of maize, or the old process of grinding by primitive races, was a great improvement over the socalled new process (5). The old process stone grinding retains most of the germ and usually more or less of the skin. Therefore nearly all of the protein is included as well as the fats, the mineral matters, the cellulose, the vitamines and the starch of the corn. Such meal feels soft and flower-like to the touch. In the new process where the corn is ground with the aid of steel rollers or disks, most of the germ and skin have been removed, the resulting meal contains less protein and much less fat, mineral matters, cellulose and vitamines than results from the old process, for as can be readily seen, the old process left in the meal much that the new process removed. In the removal of the skin of the corn six one hundredths of the whole weight of the grain and more than half the fibre has been extracted. In the modern milling of corn the germ is removed which takes away incidentally only one tenth of the weight but more than six tenths of the fat and one sixth of the proteins, and removes all the vitamines (5).

The final step in the preparation of the cornmeal for the infants' food is in the cooking of it. The flavor and appearance are improved and a better digestibility is gained thereby. Long cooking converts the nutrients found in the corn and other cereals into more digestible forms and this extended cooking is extremely important in foods which contain so much starch. Since this starch is surrounded by crude fibre largely cellulose in character upon which the digestive juices are unable to act, this wall must be broken down for the most part through cooking. The softening of this cellulose is best accomplished by cooking a long time with much moisture as seen in steaming or in boiling. Whole or partially crushed grains as resulting from the old process of grain milling require longer and more thorough cooking than the meal of the new milling process. When a cereal is improperly cooked there is always danger of the loss of the valuable nutrients through failure of digestion and through the severe irritability of the intestinal mucous membrane. In boiling cereals some of the surrounding water is absorbed and many of the nutrients pass into the remaining water. In consequence, if the water is thrown away, these food principles are lost. Steaming is, therefore, I believe, the only effectual way to prepare cereals, particularly cornmeal, for the infants' diet (9). This steaming causes the starch grains to swell and rupture their cellulose envelopes, the starch on cooling is said to be gelatinized and in this form may be kept on ice. This change takes place in cornmeal below the boiling point, in fact at a temperature of 167° F. (3).

The digestibility of the cornmeal preparation is, to repeat, almost wholly dependent upon the long cooking process. In steaming, the double boiler is preferably used. Its ingredients are water, salt and cornmeal. From one half to one teaspoonful of salt for every cup of water used. The proportion of cereal to water varies according to the kind of cereal used, the method of manufacture and the consistency desired, as seen in the thinner gruels, the thicker mush and the still thicker porridge. Four times as much water by weight as cereal is a good working basis. Add the salt to the water and boil the mixture in the inside part of a double boiler. To the boiling water add the dry cereal slowly, but stir the whole quickly. Boil for three to five minutes, put on the cover, place the kettle on the outside part of the double boiler which should be filled one third full of boiling water, keep the cover on for six hours. Cornmeal should be mixed with an equal volume of cold water before being stirred into the boiling water of the double boiler to avoid lumping (10).

While some authors have found that certain infants have the power of converting starch into sugar soon after birth, yet the majority are freer to admit that this power is seen only in a fairly considerable number. All readily agree that after the sixth week its evidence is indisputable. After six months, however, this saccharifying power is considerable in foods which contain starch. The sugar assimilation power of the infants' liver is about three times that of an adult (Grosz). At birth the amount of trypsin, amylopsin and steapsin is much less than in adults (11).

The food requirements of an infant vary markedly as to season, climate, environment and growth impulse, and each infant requires an individual amount not to be reckoned with that of other infants. In the addition of a cereal to the infant's diet, it is impor-

tant to consider the cereal, its digestibility, the amount and kind of its nutrients, and not primarily the number of calories it contains. For, says Cathcart (12), the caloric factor may be regarded as strictly secondary to the supply of material. We do not live on calories, yet all our general estimates of food requirements are quite properly for the most part in terms of calories. Caloric value is simply a very convenient physical standard for the assessment of diets, but merely because such a standard has proved of great utilitarian value, there is no real justification for placing this standard as the foundation stone of hypotheses framed to offer an explanation of cellular activity. The infant's organism is not a heat engine.

I have been using the yellow corn meal, prepared by the new milling process, for about three years with good success. There is no preference of the yellow over the white meal, as each type possesses about an equal number and equal kinds of nutrients. Beginning its use about the fourth to fifth month, I begin by adding one half oz. once a day, later one half oz. twice a day, etc. Then I add one oz. once a day, later twice a day, etc., gradually adding an amount which the infant, combined with an additional balanced ration, can assimilate. Whether it is from the high starch tolerance of the infant or from the starch and sugar content of the corn meal, or whether the grain possesses qualities which the biological chemist and investigator have not discovered, I know not. However, I do know that the infant grows well, its growth impulse is stimulated, its musculature is strengthened, and its flesh becomes pink and rosy. The research work of Mendel and McCollom would seem to show that corn and its products possess superior qualities of energy or something which other grains lack. Farina, usually recognized in this country as a wheat product, with also the oat, barley, wheat, and rye grains have not given me markedly brilliant results in infant feeding. In spite of a well balanced ration in well fed infants with no gastrointestinal fermentation or intoxications observable, the patient has had a pale skin and pale mucous membrane, soft musculature, and there is a tendency to delayed and painful dentition, and from weeping mucous membranes a tendency to adenoids. In less healthy children there is seen gastrointestinal fermentations or intoxications and a lack of energy and vitality. Up to four months of age I use skimmed milk and cream mixtures, and from the fourth or fifth month on whole, raw, unpasteurized milk, gradually adding the corn meal preparation. In my experience, the infants' tolerance for fat before the fourth month is uncertain and individual, and cannot be computed mathematically.

The gain in weight of infants from the use of cereals cannot ever be said to arise from the food alone. A balanced diet means that all the food stuffs are in proper proportion for that infant and that the addition of any one food principle means the cooperation of all the others in adequate metabolism. The infant has the power, as a matter of fact, of transferring forty per cent. of the protein of its food into new structural machinery, and the nitrogen equilibrium can be better maintained on a higher food intake of fats, carbohydrates, and inorganic salts than from an excess in animal proteins.

The gelatinous corn meal can be kept on ice almost indefinitely, and whenever it is to be used is well strained through a thin meshed colander when it easily passes through the nipple of the bottle.

At times when the infant has seemingly arrived at a starch tolerance stage, which happens sometimes during the warm, muggy days of our summer, I find it best to substitute either the oat or wheat meals, which possess a high grain protein with a relatively low carbohydrate content. During this murky period it is well to examine the urine and to test the feces for an excess of fat and for acid fermentations.

In conclusion, I may say that in the three years of my clinical experiments with yellow corn meal, I have used both the oat and wheat meals as controls. The results would lead me to believe in the higher potency and in the higher energy value of corn meal over the others. As a large proportion of all the gastrointestinal disturbances seen in infants are directly due to an unbalanced food intake and to a resulting unbalanced metabolism, as well as indirectly to a faulty psychological and physical environment, it is of great importance that the pediatrist proportion all the food elements in the infant's diet, as well as he is able for that individual infant under observation.

The author's references will appear in his reprints.

Therapeutic Pneumothorax in Pulmonary Tuberculous Children

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Every pediatrist knows how grave pulmonary tuberculosis is in children, so any treatment that might aid this condition toward bringing about a cure should be tried.

From 1922 to the end of 1924 I was in charge of a ward of tuberculous children in the clearing station (Benjamin Franklin Pavilions) of the Debrousse Hospital in which we received all the cases of pulmonary tuberculosis from the children's hospitals in Paris. There I had the opportunity of trying various treatments. There were more than one thousand cases sent for observation and I discovered that in about nine per cent. the indication for practising artificial pneumothorax was favorable, that is, unilateral tuberculous lesion in one lung.

This means that the lung tissue only is unilateral, because in children the brachiobronchial adenopathy is always bilateral, and therefore a pneumothorax is of no value.

The greatest number of our cases have been in children between four and fifteen, especially girls between eleven and fifteen years of age, because, as is wll known, pulmonary tuberculosis is more than twice as frequent among girls as boys of this age. I

have also had the opportunity to practise artificial pneumothorax on two younger children, one eighteen months and the other of seventeen months old, and the operation was completely successful. Both infants were operated upon more than ten months ago and the reinsufflations are still done. Both have gained about seven pounds since that time, have no fever, no cough, eat well and their general condition has improved.

In the beginning of my experiences I practised artificial pneumothorax only in those far advanced cases with cavities, and in a few others with rapid caseifications, or with bad hemoptysis. After my first year of success I decided to practise pneumothorax when the x ray showed only one lung affected and when tubercle bacilli were found in the sputum which was examined in the gastric fluid extracted by catheter if the child did not expectorate; also in a few cases of tuberculous splenopneumonia and when one could not get any expectoration and consequently could not find tubercle bacilli.

I recently read an article by Eliasberg in which this author stated that he had obtained the same result in nineteen per cent. of the cases in pulmonary tuberculosis in children on which he practised pneumothorax. In one out of five cases adhesions of the pleura were found. In our first series we found indications for pneumothorax in only seven per cent., but as we have started doing pneumothorax in incipient tuberculosis in one lung, our percentage could equal that given by Eliasberg.

It is not possible in this short article to emphasize the technic sufficiently. It has been developed in special works published in medical journals in France. I can only say that we use the same method for adults with the Kuss apparatus, mostly applied in France, and that we do the puncture, if possible, in the third or fourth intercostal space on the anterior axillary line, but sometimes in a lower part of the chest, if we find local adhesion in this place.

For the first injection we prepare the child with hypodermic injections of scopolamine morphine suitable to his age, and also produce a local anesthesia with novocaine, but the succeeding puncture is done without any anesthesia. For babies, the general anesthesia with chloroform is necessary because in crying the pressure is increased in the chest. In the first puncture we first inject fifty c. c. of oxygen, then two hundred to three hundred c. c. of nitrogen; in the other punctures, from two hundred to five hundred c. c., depending on the resorption of the case, but with children one must reinject every other week instead of every three weeks. The pressure in the injection must never come over the O of the manometer because if one obtains a positive pressure a deviation of the heart and mediastinum may be produced. Under normal conditions the first injection shows in the pleural cavity a negative pressure of about 14 in inspiration and 4 in expiration, but if there are more or less adhesions, you immediately get a positive pressure before having injected three hundred c. c. of nitrogen.

In my one hundred cases I have never had a serious accident. In young children I observed sometimes a little subcutaneous emphysema if the child cried between or after the injections, but it has always disappeared rapidly. In twenty-five per cent. of the cases I could observe the production of more or less fluid after various intervals of time, but in most cases this fluid is spontaneously reabsorbed without aspiration. It was always serofibrinous and transparent, only in two patients, who died, it was purulent. In some cases precocious readhesion of the pleura was produced and new insufflation of nitrogen was rendered impossible.

The results of this operation are the most important question. As immediate results I observed in all cases a great improvement; the temperature became normal after the first injection and continued normal. In seventy per cent. of the cases, particularly with the girls, after the injection a regular increase of weight was noticed, some of them gaining about fifteen kilos in two or three years.

In all my cases up to the present I had only three deaths: two patients died from purulent pleurisy, and one from tuberculous meningitis, but I think that if these children had been left alone without pneumothorax about seventy per cent. of them would have died. Now five of them can be considered as fully cured. Not only are all clinical symptoms absent, but radioscopy and radiography show *restitutio ad integrum* of the infected lung and it is impossible to know which lung has been tuberculous.

I consider it advisable to continue the injection if possible for three years. I agree with Buruant from Leysin, who considers that for adults this time is necessary for the cure of the pulmonary lesions. In a few cases, indeed, in which for different causes, or because the children were taken to the country and were not sent again to the hospitals by their parents, one observed one progressive adhesion of the pleura that was impossible to stop, namely, the lesions which seemed to be healed presented a new development when the lung was no longer collapsed, and tubercle bacilli appeared again in the sputum.

Twice I had the opportunity of doing a bilateral pneumothorax, as it is done for adults. One of the patients died from progressive tuberculosis, the other after six months is doing well and getting along satisfactorily.

For a certain number of my patients who were operated upon the first time in 1925, it is too early to say that they will continue to be in perfect condition, but I can ascertain now concerning those whom I operated upon in 1923 and 1922. The greatest part of them, that is fifty-five per cent., can be considered as definitely healed: their general condition is excellent, no tubercle bacilli in the sputum.

CONCLUSIONS

1. In every case of unilateral pulmonary tuberculosis in children, with bacilli in sputum, the therapeutic pneumothorax must be done.

2. There is no other curative method, up to the present time, that will cause the disappearance of tubercle bacilli in a few weeks with a real improvement in the general health; no fever, increase of weight, and ability to engage in sports and games with moderate care.

3. In certain cases the therapeutic pneumothorax is the only means of producing a really complete cure, with the disappearance of all symptoms, with normal breathing, no bacilli and normal x ray findings.

Historical Medicine

Hints of Medical and Other Interests in the Odyssey

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We arrived in the previous number (1) at a point in the Odyssey where we found the subject of drugs and poison and magic. The magic or drugs alone mixed with the drink are very suggestive of the acts of poisoning, real but mostly only reported, which have achieved such wide fame historically as having been practised at the courts of even the earliest Roman emperors as well as at those of the later Roman pontiffs. The historian as well as the scientific investigator has reason to approach such questions with caution. Secrecy in the very nature of the case is desirable and usually easily attainable by the poisoner. But still easier is it for men to malign their fellow men and still more difficult in such cases is it to disprove the libel, and much more prone are men to libel than to poison.

It is natural then also in the Odyssey and in the Iliad, where we find the beginning of what is our literature, we should find the beginning of records of human wickedness far outweighing, from our modern ethical standpoints in other respects than poisoning, those of human virtue. Here in the Odyssey much more than in the Iliad magic and medicine and religion and peace and war are all mixed up together. That was life then and much the same, with variations, that is life today. That is the reason the Odyssey makes a wider appeal to thoughtful men than the Iliad.

FIG. 1.—Apollo and Artemis bringing painless death to the Syrian Isle (Flakemann).

In the Iliad Nestor's concubine mixed a drink for the wounded Patroclus and if we compare the potion Circe mixed for the crew of Odysseus (2a) we note it is practically the same—cheese, barley meal and fresh honey mixed with Pramnian wine. She cast a spell over them which turned them into swine, but it was not with this innocent mixture—I mean innocent of poisonous intent, for digestion it would seem to our prejudices deadly enough. It was with the food apparently she mixed the baleful drug, but it was at a waft of her wand they turned into grunting pigs. One might be forgiven for suspecting Homer meant this as a parable, for one sees something like it, or used to see it in alcoholic days after a cocktail, though after none such as the concubine of Nestor concocted and Circe shook up for the dear friends of Odysseus. The suspicion, however, seems ungrounded for Homer can seldom be detected moralizing and doubtless he loved a lass and a glass of grog and a good song from a minstrel as well as did the people he wrote about. When, however, Circe prepared another enchantment of the kind for Odysseus, who came in later with his eyes opened by the tale told by one of the crew on the lookout for hokussing and further fortified with an antidote given him by Hermes, Circe capitulated and invited him to her bed, after feeding the swine acorns and cornell tree nuts. One often suspects Homer is speaking in parables. Was the antidote Hermes gave Odysseus wisdom from the gods? When Athena speaks to him, it is often nothing but the cautious thought that flashes through his wary brain, it would seem. I am sure that is the proper kind of thought with which to approach such a feast and such a lass as Circe. Later tragedians invented a son, as the result of this meeting of Circe and Odysseus, who killed his father and we may suppose they thought Nemesis had not sufficiently dogged the steps of Odysseus in the Odyssey and something was still coming to him for mounting the bed of Circe who had bewitched his companions with her charms. The whole thing, if it were in the Bible, would ere this have been preached from a thousand pulpits and in ten thousand sermons as the divine wisdom of the East come to us across the ages. Something like their precepts have in every literature been worked into the flowers of literature and rhetoric in every civilized tongue hanging on the details of the tale.

In speaking of the poison Circe gave the crew, it is called bitter. Something bitter was what the arrows were tipped with in both the Iliad and the Odyssey and as we go burrowing back into the Babylonian tiles baked about the time of the sacking of Troy we find poison and bitter were synonymous—the word for both was the same. The antidote Hermes gave Odysseus, disregarding any lurking thought of eastern wisdom hidden in a parable, was a plant dug by him out of the earth. In the last essay we left Homer's early critics complaining that Homer blasphemed in not remembering all the gods as possessed of all wisdom must know medicine too, and here was Hermes betraying a marvelous pharmaceutical skill in choosing simples and Odysseus in telling the tale admits all things are possible to the gods. Now this plant he showed him had a black root and its flower was like to milk. Vaguely groping after it critics, even archeologists, have won-

dered if it were not some faint reflection of the magic plants of the Zend Avesta and the Atharva Veda, the *haoma* and the *soma*. some kind of milkweed perhaps—perhaps it was the juice of the *moly* instead of the flower was white, for poets frequently get things wrong, but the text says flower. Even the unlearned in Sanskrit, Cuneiform and the Hieroglyphs can see an affinity of *haoma* for *soma* and there is a faint suggestion of *moly* for both. Persia is further on the way to India and the Zend Avesta is more akin to the Atharva Veda than to the Odyssey back in the Aegean, but the Aryans, that discredited concept of Nordic people peopling the earth by dripping off from the caravan into choice nooks on their way to the Ganges, may have named the same thing the *moly* as well as the *soma* and the *haoma*. Indeed while we are neighbors to phantasms we might as well admit that *moly* and *soma* and *haoma* and *ginseng* and *siliphon* all belong in the same class, the ever present class of drugs and remedies which pass from the mouth of one exaggerator into the mouth of another poor mortal in every age and in every tongue, for a short year or two or a short civilization or so, but always miraculous. The names may vary and so may the drugs, but the idea is the same. Some god has reached down from heaven and vouchsafed to suffering humanity a miracle to save them from their folly or from the inevitable. That is what Hermes did for Odysseus (2b) and it is no matter whether it is milkweed or ginseng or silphion or onion or garlic or mandrake or opium. Among men of differing civilizations, far separated in space and time, they have all had their adherents, who believed in their virtues as firmly at least as they did in their gods.

Whether we can extract matter of as much medical interest, of as much value to practitioners of medicine as this in the further advice Hermes gave to Odysseus is doubtful perhaps, but it is not entirely devoid of suggestion for the way to handle women, and it is the woman patient who is at once most difficult and most profitable to handle in the way of the doctor earning his daily bread. This advice he got from Hermes is what the connoisseur in the subjection of women not infrequently still uses, but I imagine it has its limitations in the practise of medicine. Abuse her, take a good sized club and beat her, frighten her with fearful threats. The editor and the writer, being married men, stand aghast at such principles held by primitive men and, they earnestly assert, the mere roué. Nevertheless Hermes advised Odysseus, "draw your sword, cut her wand"—they will eat out of your hand and invite you to their beds, these Circes, and so it was. Now was this what Odysseus, that much traveled man, versed in the ways of many cities and many lands, well acquainted doubtless with women and their wiles, was turning over in his mind as he walked over to Circe's house when he had heard from Eurylochus the story of those who had gone on before or did he really meet Hermes on the road with the *moly?*

The cloisters of reformed ecclesiasticism are poor places to read the Odyssey in. From Xenophanes and Plato to our day it is not in the light of the principles of Wesley and George Fox one must view the genius either of Shakespeare or Homer. They take the gods as they find them, manufactured it may be by dissolute and reckless men. Homer found Zeus steeped in amours and he sang the loves of Ares and Aphrodite. He found Hermes and Athena up to the worst sort of deceit and so he reported them. It is not his fault primitive men made their gods thus. We in our day would not have thought the information divinely ethical which Athena gave Telemachus or one calculated to make a son cherish the memory of his father when she related how once he went to Ilus Memerides seeking a man killing poison, not poison gas, which the fathers of this approaching generation got out of the laboratories of science, but poisonous plant juices, probably, to smear on his bronze tipped arrows. John Wesley and Xenophanes would not approve, but that is what the future poet of the great war is going to tell the sons of the heroes who fought in it. Homer didn't make any ethics.

One is curious to know what sort of poison Odysseus begged of Ilus (2c) who was too good to give it to him for it seems there were objectors and would be reformers, even in Homer's day, crying in a wilderness. Some one else gave it to him and Homer goes so far as to intimate Pallas Athena did not think it was nice. It is supposed considerable fuss was made about this incident in Athens when it became finical in the time of Pisistratus and the Athenians interpolated the mild disapproval of Athena, their sheltering goddess, but for my part I do not believe a word of it. Homer shows there are always a wicked majority plotting and carrying out evil among men, and the gods and a select ethical minority among men objecting in a futile manner. So it has been in our day, so it was in Homer's and—but prophecy is no more in my line than Homer's.

We wonder what kind of poison gas—arrow poison—as historians of science we wonder what kind of arrow poison was in use in Homeric days. Curare and the juice of the strychnos plant have been identified as the poison smeared on the points of their arrows by savages, chiefly for the chase as it would seem a certain degree of advance in civilization is necessary for their introduction in war. Some less understood derivatives from the genus Euphorbia have been used in various parts of the world, but what Odysseus sought from Ilus for use in war we do not know. It has been said arrow or spear points dipped in putrid infectious material have been noted in the remote jungles of Africa, but if they were reported as used in the chase we may conjecture some ethnologist was drawing on his imagination, unsupported by his intelligence. For war purposes it is more plausible, but for use in the warfare of advanced nations this and other bacterial poisons are yet in the future for improvement in the munitions of war.

In the Odyssey then we find man running true to the breed and vastly more busy shortening the life of his fellow man by violence and by poison in the cup and on the arrow tip than to prolong his own, except he is always hoping to outfight or outwit his enemy. Nevertheless we are not infrequently reminded that he had thoughts of sanitation, confusedly mixed with his magic and his religion. Homer even seems to dream (2d) of an elysium wherein disease did not intrude. The swineherd tells of the blessed Syrian Isle over beyond Ortygia (Fig. 1). Neither famine or disease enter there, but when men grow old

Apollo with his silver bow and Artemis with her arrows gently remove them from life. I suppose this is what the divine pair will have to do for our sanitary Utopia when we have prevented all preventable disease. Some arrangement will have to be made to get people out of this troubled world, if gland rejuvenescence reaches its goal. It is singular that at the beginning we pinned our hopes largely to fumigation. Since history began smoke has arisen at altars both of religion and of science to drive away the devil and his works. It is still seen. Ever since Homer's day, and very likely before, sulphur was used for it. The smell at least is miraculous, and we are depending more and more on cleansing—on asepsis, but that, too, was the idea of Odysseus after the slaughter of the suitors. The hall in which they perished, the tables, walls and floors were spattered with the blood of the unfortunates and at dawn he had their bodies dragged out and stacked up in the yard and he set the maids to sponging and scrubbing off the gore and, "bring me brimstone, a resource against evil, and, old one, bring me fire in order that I may smoke the room with the sulphur" (2e).

A recent commentator (3) goes so far as to say the religious value which we are entitled to attach to instances of purification in the Homeric poems is extremely small. The Achaeans, even Penelope, do not seem usually to think it is religious, but a matter of cosmetics, tidying up; it is for appearance sake often they wash their faces and hands at feasts and even at sacrifices. In the days when I was young and bath tubs were scarcer than they are now in country districts, the bath Saturday night seemed really something of a ritual and to us boys unnecessary and annoying, but I am convinced our mothers' chief idea was cleanliness, yet there was something else, too. They put on their cleanest linen and brightest ribbons for church going, even that was only unconsciously a ritual and it really seems as though that might have been the Homeric feeling to a large extent. The lustrations, purifications, were in largest part esthetical. Some religious ritual was mixed with it and sanitation seems to have come last. When scabies and cholera seemed more largely to have visited the unwashed people must have got it in their heads the gods, who sent plagues to punish mankind, must be pleased with cleanliness and angered at filth and when epidemics were abroad this doubtless was especially kept in view, but for the most part it was kept in the background. The nurse evidently wanted (2f) Penelope to wash her face before she went into the presence of the suitors and we see it was because she wanted her to look her best, but Penelope, sorrowing for her absent lord thinks it is not worth while. One is rather surprised that the critic here makes a note that neither thinks of any religious reason for her to wash or not wash her face. However, Professor Gillies is right. Why did we begin to do it? At the bottom of this lies much which is important for us to know. If Penelope bathed and put on clean clothes before her vows to the gods and made Telemachus do so, too, she was but a forerunner of the mothers in my young days, for it may have been as true of her as of them that it was only incidentally a ritual. It was often omitted. Week day nights for prayer meeting the ceremonial of the bath was omitted, but it was said of an ancient friend of mine, who after a long and pious life built a house with all the modern conveniences, that he declared, when the building was handed over to him in the beginning of the week, he could hardly wait for Saturday night to take a bath in the tub. With Penelope and Telemachus purification became a custom, a habit, and it would seem as though its sacred affinities became a tradition more or less at first and finally the tradition nowadays seems to have been lost both for the Sabbath and salvation.

1. New York Medical Journal and Record, December 2, 1925.
2. Homeri Opera, Monroe et Allen, Oxford, Cambridge Press, 1908. Odyssae
(a) lib. X 1. 234 seq.
(b) X 304
(c) I 259
(d) XV 1.404
(e) XXII 481
(f) XVIII 170
3. Gillies, M. M. *The Classical Quarterly* XIX No. 2, April, 1925.

What Did the Indians Know About Medicines and Healing Treatments?

LESTER G. HERBERT
Auburn, N. Y.

(*Concluded from page* 24)

Boneset.—Used by all the tribes as a remedy for fever and colds.

Joe pye weed.—Used for difficult urination.

Jalap.—The Mexican Indians used the root as a drastic purgative.

Cranesbill.—Used in diarrhea, and by the Cherokee in decoction along with chicken grape as a mouth wash in thrush.

Bowman's root.—Employed internally as an emetic and externally as a poultice for swellings.

Grindelia.—Used variously in decoction for colds, consumption, colic, and as a wash for saddle galls and sores on horses' backs.

Witch hazel.—Used in infusion as a remedy for bruises, piles, and hemorrhages.

Hepatica.—Used as a tea or chewed for coughs, and together with walking fern in decoction as a remedy for snake dreams.

Cow parsnip.—Variously used for fainting, convulsions, intestinal pains, and as a poultice for boils.

Hops.—Fruits used in a tea for fever and abdominal pains; the chewed roots, occasionally with roots of ground cherry and meadow anemone, were applied to wounds.

Rattlesnake fern.—The bruised root was applied to cuts.

Sweet scented waterlily.—Preparations of the rhizomes were used for leucorrhea and suppurating glands.

Blue cohosh.—Variously used as a parturient, antirheumatic, febrifuge, etc.

Pipsissewa.—Internally, as a tonic and diuretic; externally, for open sores.

Water hemlock.—The roots were eaten by such as desired an early demise.

Black snakeroot.—A remedy for rheumatism, disordered menstruation, slow parturition, and bites of poisonous snakes.

Kinnikinnick.—The inner bark of this dogwood was employed in a smoking mixture, also as an emetic and in the preparation of black and scarlet dyes.

Yellow puccoon.—Used as a tonic, stomachic, and in the treatment of ulcers and sore eyes; also as a yellow dye.

Waterleaf.—A remedy for internal pains.

Cassine.—The leaves of this shrub were the source of the ceremonial "black drink" of the aborigines, who claimed it restored lost appetite, strengthened the stomach, and gave them agility and courage in war.

Blue flag.—Used as a remedy for gastric disturbances, earache, sores, and bruises.

Red cedar.—Variously employed as a remedy for headache, cough, colds, cholera, and as a diuretic and nervine.

Indian tobacco.—The dried leaves were smoked as an emetic.

Canada moonseed.—The rhizome and roots were used for scrofula and sore mouth.

Indian pipe.—The juice mixed with water was applied to sore eyes.

Tobacco.—The leaves of all native species were smoked, placed in the cavities of teeth for toothache, and in the hollows of the neck with oil and soot for cough.

Prickly pear.—The pith was used in the smoke treatment for sore eyes.

Ginseng.—Variously used for headache, cramps, female diseases, and, with red paint, as a love charm.

Poke root.—The root was used as an emetic and antirheumatic, the berries for a red stain.

May apple.—The rhizome and roots were used as a cathartic.

Seneca snakeroot.—Used in the form of infusion of the leaves for sore throat and in decoction as a remedy for coughs and colds and rattlesnake bites.

Solomon's seal.—The bruised root was applied as a poultice to swellings.

Wild black cherry.—The inner bark was used in infusion for soreness of the chest and as an application to sores.

White oak.—The bark of this and other oaks was used for diarrhea.

Castor oil bean.—The Maricoba tribe prepared earache drops from the seeds.

Wild roses.—An eye wash was made by steeping the roots in warm water.

Rumex.—The root and green leaves were variously prepared for treating hemorrhages of the lungs, sores, boils, wounds, etc.

Blood root.—Used as a red dye and love charm.

Scullcap.—In decoction as an emmenagogue and for numerous other ailments.

Spigelia.—Valued as a vermifuge before the discovery of America, also used as a sedative and diaphoretic.

Dandelion.—The powdered leaves were used in dressing fractures and bruises.

Bethroot.—A remedy for nosebleed and female disorders.

Hemlock.—The finely powdered bark was used to prevent chafing.

Cat tail.—The down as a preventive of chafing, the roots and ripe blossoms for scalds, the roots with the white bases of leaves for cramps.

Slippery elm.—Inner bark used as an expectorant and laxative, also cooked with animal fats in rendering out the grease, to prevent rancidity.

American hellebore.—New England Indians used the rhizome and roots as an ordeal in the selection of their tribal chiefs.

Culver's root.—Used in decoction as a purgative.

Cascara sagrada.—Used by the northwestern tribes as a purgative.

Sarsaparilla.—Used as an alterative by the Mexican Indians.

Krameria.—Used as an astringent by Indians of Texas and Mexico.

Aconite.—The leaves of a native species were applied for neuralgia and headache.

Red baneberry.—Used in decoction for gastric pains.

Aletris.—Used in decoction as a stomachic, tonic, and emmenagogue.

Pulsatilla.—Used as a counterirritant in rheumatism and neuralgia and as a love charm.

Bearberry.—Used in a smoking mixture and in decoction for pain in the back.

Artemisia.—An incense for exercising evil powers and in decoction for colds, worms, and other ailments.

Trailing mahonia.—In decoction as a stomachic.

American wormseed.—As a tea for painful menstruation.

ANIMAL DRUGS

Rattlesnake.—Variously prepared as a remedy for consumption and rattlesnake bite.

Pig.—The snout and blood were employed for snake bites.

Beaver.—The preputial follicles were used as an emmenagogue.

Cricket.—As a remedy for dysuria.

Lizard.—In decoction for bodily pains.

Spider.—Spider's web was applied to cuts as a styptic.

Owl.—The feathers were used as a remedy for loss of flesh.

The oils and fats of the buffalo, bear, and other wild animals were used as liniments and as ointment bases.

MINERAL DRUGS

These include red ochre mixed with fat for sunburn, slaked lime for gunshot wounds, woodashes for inflammations, and red clay for inducing sterility.

The Indians had a more extended acquaintance with the materials of medicine than has generally been believed. While some of their practices were shamanistic and a number of their remedies worthless, they employed many drugs of real value. Among the drugs which they used the following are officially recognized in the present editions of either

the *United States Pharmacopœia* or the *National Formulary:*

Seneca snakeroot, pleurisy root, poke root, yellow dock, jalap, blue flag, beth root, geranium, American hellebore, black snakeroot, golden seal, bloodroot, Virginia snakeroot, May apple, pint root, aletris, lady's slipper, angelica, Canadian hemp, spikenard, Canada snakeroot, trailing mahonia, blue cohosh, purple cone flower, Culver's root, cascara sagrada, sarsaparilla, wild black cherry, slippery elm, prickly ash, sassafras, dogwood, wahoo, butternut bark, white oak bark, rhatany, blackberry root bark, yerba santa, jimson weed, bearberry, witch hazel, pipsissewa, arbor vitæ, grindelia, lobelia, boneset, scullcap, pulsatilla, life root, verbena, elder flowers, hops, vanilla, pumpkin seeds, larch agaric, and turpentine. A number of others have appeared in former editions of these works.

From the Red Man of this continent, our forefathers gained knowledge of many of the uses of these drugs which has been passed down to the present generation as a valuable heritage.

Contributors to the Science of Medicine

Ephraim McDowell

Of the three outstanding pioneers of American surgery William Beaumont, J. Marion Sims, and Ephraim McDowell, the latter was most essentially the frontier practitioner, now rightly accorded the honor so long withheld from him or disputed, the "father of ovariotomy," Ephraim McDowell has now fully come into his own.

He was descended from north of Ireland stock, his greatgrandfather coming to Pennsylvania in 1729. In 1737 Ephraim McDowell, his greatgrandfather, with his family moved to Virginia. Ephraim McDowell was born on November 11, 1771, the ninth of eleven children and the sixth son. In 1783 the family removed to Kentucky where his father became one of the judges of the First District Court and in Danville, Kentucky, Ephraim McDowell spent the working years of his life.

In 1793 he went to the University of Edinburgh after receiving the best education that those early times and frontier conditions could provide. During his university career anatomy and surgery appealed to him especially, but for internal medicine his enthusiasm was lukewarm. It is even said that he characterized it as more of a curse than a blessing to the human race, while surgery he declared to be "a certain branch of the healing art." At Edinburgh he came under the influence of John Bell, the brother of the yet greater Charles Bell, the discoverer of the respective functions of the anterior and posterior roots of the spinal nerves.

McDowell, although an earnest student, is said to have left Edinburgh without taking a degree. Upon this point Gross writes: "I am not able to say, from the facts before me, whether Dr. McDowell was graduated from Edinburgh or not. His brother, Colonel McDowell, states that he was, and in this opinion he is joined by his son, as well as by his nephew, Dr. William A. McDowell. My belief that he did not take a degree in Scotland is based upon three facts: first, that no diploma of the kind has been found among his papers; second, that Dr. Samuel Brown, his classmate at Edinburgh, solicited him, after he had attained his eminence in his profession, to permit him and his friends to draw up an account of his cases in ovariotomy, in Latin, in order that it might be sent to Edinburgh, to secure him a degree; and third, that in 1825 the University of Maryland conferred upon him the degree of Doctor of Medicine, a circumstance which would hardly have happened had he been a regular graduate."

It may be taken for granted that he did not receive his degree from Edinburgh. In 1795 he returned home and began the practice of medicine at Danville, Kentucky. Of his contemporaries in the neighborhood two made great names as surgeons. Of these Walter Brashear in 1806 performed the first successful hip joint amputation. This was three years before McDowell's first ovariotomy. Brashear's case was not the first hip joint amputation as many believe, but it was the first successful one. Baron Larrey did the first seven years before. Dudley the lithotomist was another contemporary although he was considerably younger, and according to Gross was the first to ligate the subclavian artery and in 1841 successfully ligated the carotid artery. All this was prior to the age of anesthetics. He used boiled and boiling water in surgery. He died near Lexington, Kentucky, in the eighty-fifth year of his age.

Although McDowell began his career in a small frontier town his extensive and influential connections and the prestige of his foreign training and the absence of competition quickly brought results and for some time he was the best known surgeon west of the Alleghany Mountains. His practice is said to have extended over hundreds of miles and he had to travel to visit his patients under circumstances unknown to modern practitioners. There were no roads and no stage coaches and McDowell's professional calls were made on horseback through trackless regions. Indians and wolves were still a menace. Some of these calls, as Schachner points out in his biography of McDowell, meant absence from home for a week or more; in others, a surgical operation was involved. When it is borne in mind that anesthesia was unknown, that operations were done under conditions of the crudest simplicity, with no trained assistance of any description, it is wonderful to imagine how the old time frontier surgeons obtained the results they did.

McDowell performed all the operations of the day

and up to 1828, two years before his death, he had done thirty-two lithotomies without losing a life, among his patients being James K. Polk, who afterwards became President of the United States.

It is recorded that by preference he operated on Sundays, a practice that was in a measure followed by some of his successors in early Kentucky surgery. The reason given by some was that McDowell who was religious liked to have the benefit of the prayers of the church.

It was fourteen years after he had begun the practice of medicine that he set the seal to his fame by doing the first ovariotomy. He was called in to see a Mrs. Jane Todd Crawford, who lived about sixty miles from Danville, who was thought at first to be pregnant but as she had far exceeded the usual time it became evident that some abnormal condition existed and McDowell was sent for. When he had diagnosed the condition to his satisfaction he told Mrs. Crawford that if she consented he would endeavor to perform an operation which had never been attempted previously, for a case which was universally regarded as hopeless. Mrs. Crawford, who was as courageous as McDowell, accepted his advice and promptly appeared in Danville for the experiment as she termed it. For a description of the operation there is the direct statement of McDowell himself which was unearthed by Gross. The following is the account:

"My nephew, Dr. James McDowell, whom I had brought up, had graduated a few months before this time in Philadelphia, and had commenced business as my partner. Being in delicate health at the time, it was my intention to remove to the country in the spring, or as soon as I could establish my nephew in business. From the time of Mrs. Crawford's arrival he had made frequent attempts to prevent me from operating; but, finding my determination was fixed, he agreed to be present, but not until the morning I operated, and as my partner, to assist; for should the patient die, the responsibility was all my own; should the patient live, it would assist him in his outset in business.

"The day having arrived, and the patient being on the table, I marked with a pen the course of the incision to be made; desiring him to make the external opening, which, in part, he did; I then took the knife and completed the operation, as stated in the *Medical Repertory*. Although the termination of the case was most flattering, yet I was more ready to attribute it to accident than to any skill or judgment of my own; but it emboldened me to undertake similar cases; and not until I had operated three times, all of which were successful, did I publish anything on the subject. I then thought it due to my own reputation to throw all the light which I possessed upon diseased ovaria."

The features of the operation which Schachner thinks should be emphasized are these:

1. It was performed without anesthetics, antiseptics, trained help, or any operative accessories save the simplest domestic utensils.

2. The incision was made on the left side and nine inches in length, parallel to and three inches from *musculus rectus abdominus* presumably over the most prominent part of the tumor.

3. The tumor was freely movable, with a pedicle of sufficient length to enable ligation before the evacuation of its contents, or the delivery of the sac.

4. After opening the abdomen, the successive steps of the operation were: a. The ligation of the Fallopian tube and pedicle near the uterus. b. The evacuation of the contents, which were described as a "dirty gelatinous looking substance." c. The extraction and removal of the solid portion. d. Replacing the intestines that escaped with the opening of the abdomen and remained exposed until the removal of the solid portion. e. Draining the peritoneal cavity by turning the patient on her side to allow the escape of blood. f. Closure of the abdomen with interrupted sutures, allowing the ligature of the pedicle to pass out at the lower extremity of the wound.

5. Time of operation about twenty-five minutes.

6. The tumor was partly cystic and partly solid, the cystic element weighing fifteen pounds and the solid element seven and one half pounds, a total of twenty-two and one half pounds.

7. In five days he "found the patient engaged in making up her bed," and in twenty-five days she returned home.

There are eight cases of ovarian tumor operated upon by McDowell of which notes exist; four of the patients were white and four negresses. Five of these cases were complete operations, and three were incomplete. There was one death as the result of the operation. In a letter on the Crawford case McDowell said: "Since that time, 1809, I have operated eleven times and lost but one patient."

While attempts have been made by surgeons of several Enropean nations to deprive McDowell of the honor of first doing an ovariotomy, and while a certain amount of confusion exists as to the details, it is universally conceded now that to him belongs the fame of being the "father of ovariotomy" and to some extent of abdominal surgery.

No doubt it was largely because of the fact that McDowell lived in a frontier country on the fringe of civilization that made ovariotomy possible to him. He himself, a frontier man, selfreliant in a high degree, and living among a selfreliant, sturdy and free people, he had opportunities for pioneer surgery denied to the conservative cautious surgeons of towns. If he had not met such a woman as Mrs. Crawford his opportunity might never have come and their names will go down to posterity linked together as responsible for ovariotomy.

McDowell is described as being nearly six feet in height, erect, and inclined to corpulency, with a florid complexion and lustrous black eyes. He was very strong and agile, entertaining and possessed of a ready wit and humor. In his relations with his professional associatés he was modest and generous, but although "he did unto others as he would they should do unto him," the treatment he received from them was by no means of this kind. They were as a rule carping critics of his ability and work.

McDowell was not a rich man but was very well to do. As was the custom in his day, he owned a farm managed by an overseer and where he bred fine horses and swine. It may be said that he earned very good fees. In the Overton case, one of McDowell's ovariotomies at which General Andrew Jackson was

present, he stipulated for a fee of five hundred dollars, but it is said received fifteen hundred dollars from the grateful husband. Gross refers to this "as the largest fee ever paid in this country for a surgical operation."

When McDowell was thirty years of age he married Miss Sarah Shelby, the daughter of Isaac Shelby, Kentucky's first governor. Six children were born to this union, two sons and four daughters.

Towards the close of his life he conceived the idea of a country home to which to retire. According to some accounts he did not live to see the house completed; other accounts say that he spent the last few years of his life there. He gave this country home a Scotch name, Cambuskenneth, after the old Abbey of Cambuskenneth near Stirling. He never forgot Scotland, the Scotch blood in his veins was stimulated by his sojourn in Scotland and his walking tours in that picturesque and romantic country imbued in tradition.

The exact date of his death is not known. Some believe that he died on the evening of June 20, 1830, others give the date of his death as the evening of June 25, 1830. Schachner says, "As a discrepancy exists both as to the dates of his birth and his death, we may be permitted to add that so far as our study of the subject goes, a decided preponderance of the evidence favors November 11, 1771, as the date of his birth, and June 20, 1830, as the date of his death." He was fifty-nine at the time of his death, and his remains were interred in the family burial ground of the Shelbys, at Travelers' Rest, about five miles from Danville. In 1879 his remains were removed to what is now McDowell Park, formerly the old Danville Cemetery, which was given by the citizens as a site for the erection of the memorial monument. This occurred through the activity of the Kentucky State Medical Society.

Many of the pioneers of medicine and surgery, among whom Beaumont, McDowell and Marion Sims are supreme examples, were general practitioners in out of the way country districts. As said before this circumstance was in their favor as they were untrammelled by the conservatism and tradition which is apt to surround medicine and surgery in towns even in this enlightened age. Also their opportunities for original surgery, at any rate, were in pioneer days more numerous by far. The honor due to the surgeons of those times was that like Beaumont, McDowell and Marion Sims they saw their opportunities and seized them. It may be mentioned that Jenner was a country practitioner and that Sir James Mackenzie, who died recently, lived the greater part of his life as a general practitioner and worked out amid the arduous duties of his practice, his revolutionary views of the heart and its diseases.

The frontier surgeon, Ephraim McDowell, blazed the trail for those who have made such marvelous progress in abdominal surgery, and we may all be deeply thankful that he was a frontier surgeon or ovariotomy would not probably have come so soon nor would abdominal surgery be in the satisfactory position that it is in at the present time. The schools, although they may teach much, often at the same time tend to kill initiative. The difficulties which McDowell and frontier and country practitioners of the past times met, only served to put them on their mettle and bring out anything great that might be in them. The luxury so to speak which surrounds medicine and surgery nowadays is enervating, perhaps, rather than invigorating and stimulating.

Alcoholism in Byzantium.—Surrounded by the vineyards covering the slopes of the Hellespont, the Propontis and the Bosporus, Byzantium was always intemperate, said Professor Anselme in his recent paper before the Société Française d'Histoire de la Médecine (*Æsculape,* May, 1925). Theopompus and Phylarcus dwell upon the large number of inebriates to be found among the Byzantines. "These inebriates," says the latter, "live in taverns and rent their lodgings with their wives to strangers. They cannot bear to heâr the bugle call to war, even in dreams." Christian Byzantium was not less sober than pagan Byzantium and the large cities of the Grecian Empire followed suit. Drunkenness was a vice of so great extent that its consequences were more or less remote were known even to persons ignorant of medicine. Among disturbances attributed in those days to alcoholism were heaviness of the head, amblyopia, gout, tremors, paralyses, jaundice, apoplexy, epilepsy, disorientation, and dulling of the mental processes and loss of acuteness of intellect.

At various times the civil and religious authorities took measures to check alcoholism. But all their regulations seem to have had little effect, and alcoholism was many times the cause of bloody riots. Drunkenness, common among the lower classes, was by no means rare in other classes of society. A number of high functionaries, patriarchs and even churchmen were addicted to drink. But, in spite of the examples that he quotes, Professor Jeanselm states that the conclusion must not be drawn that drink was the rule among the higher classes of Byzantine society. Many of their rulers were exemplary in their conduct, and of the seventy-eight sovereigns who occupied the throne of Byzantium only ten were notoriously intemperate. After the taking of Constantinople, alcoholism continued. From their contact with the Greeks the Musselmans gave themselves over to drunkenness, in spite of its ban by the law of the prophet.

Bleeding a Military Punishment Among the Romans.—In a work, State of Gaul in the Fifth Century; Extract from the Memoirs of Uribald, published in Paris in 1805, is to be found a curious passage describing bleeding inflicted as a common punishment for certain Roman soldiers. "It is necessary to class bleeding among corporal punishments, a bizarre custom, which we have witnessed. It consists in opening a vein of the offender and drawing therefrom some drops of blood, as one would treat a bedridden patient. Opinions differ as to the origin of this curious custom. According to some, the offender is treated in this way because a cowardly act is so opposed to the military spirit that it can be looked upon only as a symptom of illness. According to others, it is to make the guilty one lose from his ignominious breast a part of that same blood which he has refused to shed for his fatherland. Aulu-Gelle who lived about the year 130 of our era, also that this is an ancient custom in military discipthat is to say three centuries before Uribald, says line."—Translated from *Æsculape.*

Editorial Articles

MEDICAL MEN AS POETS

A large number of members of the medical profession have been poets of considerable lustre. Dr. Charles L. Dana, himself endowed with high literary gifts, has collected and published in book form poetical works written by medical men containing one hundred and fifty-seven names. A French author has published a list even longer. It might be thought that poetry and medicine were not compatible and this view is largely borne out by history. The great poets who were medical practitioners or engaged in scientific medicine are few. Goethe and Von Haller, perhaps, were the only ones who were at the same time in the first rank of poets and distinguished in science. For the most part medical men who were also great poets were only medical men incidentally and little or not at all concerned with the practice of the healing art.

The present poet laureate of England is a doctor of medicine but can hardly be ranked with the great poets. Oliver Wendell Holmes was a great prose writer and composed good poetry and was in addition a distinguished physician, and the same remark may be made of S. Weir Mitchell. Schiller was an army doctor, but gave up this position as soon as he could. John Keats qualified but practised so little that few persons are aware that he gained a diploma to practise. George Crabbe, the poet of the peasant and of nature, according to Byron "Nature's sternest painter but the best," practised medicine for a short time and then forsook it for the church. Robert Southey was a medical student, and Coleridge dabbled in medicine, while it is not known whether Oliver Goldsmith was authorized by law to practise medicine or not. The unhappy Francis Thompson, author of *The Hound of Heaven,* spent eight years as a medical student. Rabelais practised as a doctor at a time when those who took holy orders were also physicians. Mark Akenside, of Newcastle-on-Tyne, was a poet of sorts. Francisco Redi and Bellini were physicians and poets of a high order. Tobias Smollett, whose verses are greatly overshadowed by his prose, was a ship's surgeon.

In more recent times Thayer, of Baltimore, has excelled in poetry, while Sir Donald MacAlister has translated German into English and Scots verse and Russian and modern Greek into English and old Scots verse, and some of the Czechoslovakian dialects into English and Scots verse with equal facility. The busy physician or surgeon has little time to spend on the making of poetry, and perhaps flies to it rather as a distraction and a relief for an overstained nervous system.

Recently Dr. Spencer Michael Free, F.A.C.S., has published poems that he has written in the interludes of a busy practice during the past few years, *The Human Touch and Other Poems.* These poems are marked by sentiment, realistic descriptions of men, scenery and things and enlivened by the spice of wit and humor. Also it may be said that they possess much literary merit. Among the medical poets of this country Dr. Free deserves a place.

CARDIAC RHEUMATISM IN CHILDREN

Heart disease was found to be the chief cause of death in the general registration area of this country in 1924, according to statistics, accounting for 176,671 fatalities, a slight increase over those of the preceding year. Heart disease generally, or at any rate very largely, begins in childhood in the form of cardiac rheumatism and could be prevented no doubt to a very considerable extent.

Dr. Llewellyn J. Llewellyn delivered recently in London the presidential address before the Section of Balneology and Climatology, Royal Society of Medicine. He took as his subject The Rheumatic Diathesis and dwelt especially on the cardiac rheumatism of children. He believes that the insidious cause of rheumatism affecting the heart in children is one of malnutrition of the cardiac wall. He submits that the insidious onset and often afebrile course of cardiac rheumatism, and alike the site and character of the muscular and fibromuscular lesions, are compatible with their metabolic and noninfective origin; that the primary change is one of cardiac malnutrition, arising on a subthyroidic substrate, reinforced by a vitamine deficient diet and recurring vascular stasis in the coronary arterioles. For the subthyroidism and assumed instability of the coronary circulation preclude speedy and efficient oxidation of lactic acid and other fatigue products elaborated during cardiac activities.

Muscular exhaustion induces acidosis and acidemia and these conditions exist in cases of acute rheumatism preceded by overfatigue. The guiding principle of Llewellyn's theme is that there is a diathesis or constitutional predisposition which renders certain persons liable to socalled rheumatic affections. The problem of heart disease in children is still unsolved. Although it is known that acute rheumatism is responsible for much of it, it is not known how acute rheumatism is caused and as the effective way to

prevent heart disease in children is to prevent acute rheumatism, the solution of the problem appears to lie in discovering means for preventing this disease. Llewellyn suggests that certain factors enter into the causation of rheumatism and that the soil is one of the most important, if not the most important, of these factors. His views are refreshingly out of the common, and as he has made a life long study of rheumatism in its various forms, they are worthy of careful consideration.

CANCER

What volumes we have of statistics pro and con for the increase in incidence of cancer, and what an awful waste of time and money goes on in their compilation and distribution.

What matters it whether cancer is increasing—we know it is not decreasing, and we know that its victims are a host. What we want to know are the conditions which induce it and its more immediate cause. There are cities in this country which publish monthly their socalled normal rates for smallpox, but we trust we will never become so dulled by its very frequency that we will have a normal rate for cancer and be only interested that the deaths do not exceed this limit.

We are entering, apparently, on the understanding of a new phase of the etiology of disease—the realm of the double agent, or, more likely, triple agent. We have had single agents, as the typhoid or the tubercle bacillus working in nonimmune tissues, and the double agents of fatigue, cold, or injury plus such a bacterial agent. There would seem to be also a virus working with ultravirus and, possibly, these assisted by metabolic mistakes over a long period. Cancer research seems to be tracking a double agent to its lair, but, since cancer is a disease of civilization, there must be some general fault of hygiene leading, in most cases, to the rooting of the more specific agents, just as dental caries has its origin in unsuitable diet. It is in this underlying condition, rather than in viruses and ultraviruses, that we should be most concerned.

The possibility of the cultivation and observation of tissues outside the living body is the most significant finding in medicine since the discovery of bacteria and of their causal relation to disease and will, undoubtedly, prove a key to the door, or one of the doors, of the cancer mystery, for these tissues can be subjected to various conditions, organic and inorganic.

Since cancer seems to be connected with parasitism of some sort, it is not unlikely that the race will, in time, acquire some immunity, just as it has for tuberculosis, for we know that the tide of tuberculous invasion has been gradually declining through the development of antituberculous agencies in the body rather than out of it. Cancer develops at an advanced age, but we do not as yet know in how many persons who do not succumb to the disease the causal agents may, as in tuberculosis, be at work at a very early period of their existence.

THE ADVANCE OF PLASTIC SURGERY

The war gave an immense impetus to the use of plastic surgery. Up to 1914 while the method was employed in civil life, it was not used as a means for repairing industrial injuries to the extent that it might have been. Now it appears to be coming into vogue for both cosmetic and strictly utilitarian purposes.

One of the most earnest and persistent advocates and practitioners of plastic surgery in this country is Dr. J. Eastman Sheehan, of New York, who has written a book on plastic surgery of the nose. This book, published recently by Paul B. Hoeber, Inc., New York, is a valuable testimony to the skill and ingenuity of the author in remedying many of the malformations or disfigurements of the outer nose, and a splendid example of the medical bookmaking art. Dr. Sheehan's book and those published within the past three years by Mr. Harold D. Gillies, of London, and Mr. Pickerill, of New Zealand, convey a good idea of how the specialty of plastic surgery is progressing.

In the preface to his book Dr. Sheehan pays a well deserved tribute to Mr. Gillies who, it may be remembered, was mainly responsible for the evolution of marked advances in the surgical methods of facial repair at the hospital established at Sidcup near London during the war. In most of the larger medical schools in this country departments of plastic surgery have been established and are doing excellent work. At St. Louis Hospital, Paris, an international clinic of otorhinolaryngology and faciomaxillary surgery has been established.

Plastic surgery has just been referred to as a specialty and if it is not generally so regarded by the medical profession, it seems that the time is fast approaching when it will take its place among the already long list of specialties.

An underlying motive for the introduction of plastic surgery was the desire to make use of the material of the body itself for its own repairs. It has been shown that this can be done successfully to the limited extent to which the method has as yet been put. This success opens a much wider field and the use of plastic surgery may be extended to the repair of parts of the body hitherto not subjected to this form of treatment.

The war taught us that plastic surgery was invaluable under the conditions then prevailing and since then it has been shown that in civil life this mode of repairing the visible areas of the body has a large field for its work. The future of plastic surgery is highly encouraging and it is certain that its scope of usefulness will be greatly enlarged.

TABOOS

"Provision for the adequate and temperate expression of sex is a necessary concern of every people." So says a student of the sex problem and the statement seems sensible on paper, but how is this pleasant state of affairs to be brought about? The author of this declaration does not make clear how it is to be done. There being no such provision made collectively (and there is not likely to be any) the "people" make provision individually and to a larger extent than has been supposed. Besides the agelong, deplorable outlet supplied by the prostitute, there is the practice of masturbation to fall back upon.

Until recently masturbation has been considered comparatively rare and confined chiefly to children. Moreover, it has been looked upon as a sin of the first water and a practice most detrimental to health. Eleven societies are hard at work solving the sex problem. One of these, the Bureau of Social Hygiene, in making a study of the sex life of the average woman, discovers that two thirds of unmarried college bred women have practised masturbation and one third of them, at the average age of thirty-seven, still continue this expression of sex. How naughty and how natural! Nor is it likely that they are different from their sisters who have not sojourned in college nor "worse" than those of a previous time.

Among normal boys and men who do not find other sources of sex expression the number who masturbate or have done so to some extent probably runs in the neighborhood of one hundred per cent. Even among animals (other animals we should say) at least domestic animals and wild animals in captivity, the practice prevails.

Reconstructing our quoted first sentence we can say that the expression of sex has been a necessary concern of every people and they have made provision in their own way and as best as they could. Probably they have solved the problem as well as it is likely to be solved.

By agelong public opinion the practice of masturbation is a vice and a sin, though, by private opinion, it seems to be considered neither the one nor the other. According to the advices from the group of college women, those who have masturbated are healthier than the others, as are also those who still continue the practice. Moreover, those who began early in life are no worse off than those who started after they had reached the age of eighteen.

Casting off agelong prejudice, we fail to see any essential difference physiologically between autoerotic and erotic practices, and pathologically safety is very much on the side of the former. The prejudice dates back to a very early date when the welfare and even survival of the tribe depended on having all possible population and when it seemed, in the wisdom of the elders, that it was a sin against the tribe and, hence, against the tribal god to waste seed in any but procreative channels. The spill of spermatozoa according to the manner of Onan came under the same tribal interdict, and the person who was so antisocial fell under the curse of the deity. The extension of this latter practice, which prevails among nearly all intelligent married persons today, to those who, in this twentieth century, need this or other means of limiting offspring, is opposed by a few truly fossiliferous individuals because the law that applied well enough among a primitive people struggling against slavery or extinction by war and pestilence, is looked upon as equally applicable to an age suffering from overpopulation, especially with overpopulation by the less intelligent.

The patients who come to the physician because of masturbation or because of onanism are those who are suffering because of mental states affecting the body begot of the old taboo, and not on account of effects of the practices themselves. The physician can cure them only by reassurance that they are neither sinful nor vicious and that they are in very excellent company in these practices. Instead of being a "vice," or a "sin," it is a means of saving a great many from the sin of both male and female prostitution and from gonorrhea and syphilis and their dire results on self or others.

THE NEW SOCIETY OF HEALTH

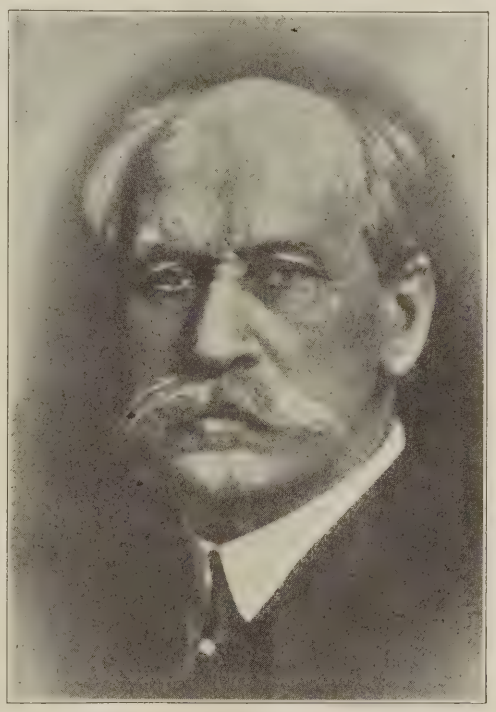
The New Society of Health, sponsored by Sir Arbuthnot Lane and of which he is president, was publicly ushered into the company of societies at a luncheon given to the founders by the Aldwych Club in London on December 11th last. It may be remembered by our readers that Sir Arbuthnot Lane explained the purposes for which the society was organized at a luncheon given in his honor by Dr. William Seaman Bainbridge in New York recently. At the luncheon in London the Earl of Oxford and Asquith, one of the founders. described the *raison d'être* and the aims of the society. Among those present were distinguished politicians, well known business men and leaders of the medical profession.

Obituary.

FRANCKE HUNTINGTON BOSWORTH, A.M., M.D.

D. Bryson Delavan, M.D.
New York

Dr. Francke Huntington Bosworth, son of Daniel P. Bosworth, a merchant, and Deborah Wells Bosworth, both of New England origin dating back many generations, died at his home in New York October 17, 1925. He was born January 25, 1845, in Marietta, Ohio, where his schooldays were spent and where he also attended Marietta College from 1858 to 1860. At the outbreak of the Civil War young Bosworth at once enlisted and saw active service in West Virginia under General Rosecranz. Having served his term of enlistment, he entered Yale College in the Junior class, graduating in 1862, with a group of associates, several of whom in later years became distinguished members of the New York Academy of Medicine. After graduating he again enlisted. His regiment was sent to the Peninsula and there he again saw active service, especially in repelling the raids of General Morgan. Having completed his military service he came to New York and matriculated at Bellevue, graduating in 1869 as valedictorian of his class. After serving the usual internship at Bellevue he entered into active practice in New York City and soon became interested in the study of the diseases of the upper air tract. In 1871 he was appointed lecturer upon this subject at Bellevue, and in 1881 was made full professor. When in 1898 that school united with the Medical Department of the New York University, Dr. Bosworth continued in his position as professor, retaining it until his final retirement from active work.



FRANCKE HUNTINGTON BOSWORTH

The career of Dr. Bosworth was marked by extraordinary and untiring industry. Enthusiastic in the development of the department of his choice, he gave to it the full devotion of his life. His days, spent in laborious office and dispensary work and in teaching, were followed by his arduous literary labors carried far into the night.

He distinguished himself as a writer, a teacher, and a practitioner, but it is upon his eminence as a pioneer contributor to the pathology of laryngology and to the practical application of his advanced ideas that his fame will endure. His theses and published articles, covering a long period of years, were numerous, comprehensive, and valuable. Possessed of unusual literary ability, his style was clear and forceful. The many new suggestions which he advanced were upheld with the full courage of his strong convictions, not seldom against adverse but, as time proved, mistaken criticisms. In discussion he delighted in drawing forth the arguments of the opposition, not so much for the pleasure of successfully refuting them, as for the profit of recasting and correcting such of his own views as might be imperfect before finally committing them to print. He had well learned the secret for the successful launching of a new idea, namely, that to cause it to be accepted it must first be intrinsically good, and then brought vigorously before the world by persistent, oft repeated attacks through the media of the journals, the lecture, and the society debate. With untiring industry and rare singleness of purpose he worked for the advancement of his chosen art.

Early in his career he entered upon the field of publication and in 1879 issued a *Handbook Upon Diseases of the Throat for the Use of Students.* In 1881 appeared his *Manual of Diseases of the Throat and Nose.* For the next ten years he was busily engaged in the preparation of his greatest work—a treatise in two large volumes on *Diseases of the Nose and Throat.* These volumes appeared, respectively, in 1890 and 1892. Meanwhile, the importance of the nasal region, never before fully appreciated, had impressed Dr. Bosworth so forcibly that in this publication he changed the sequence of the title of his work, and for the first time in history, instead of using the time honored title—Throat and Nose—reversed the order. Finally, in 1896, he issued his *Textbook on Diseases of the Nose and Throat,* a book which for many years enjoyed the popularity which it deserved.

The treatise of Dr. Bosworth, in two volumes, published in 1890, was a monumental contribution to laryngology. Together with the pioneer work of Dr. J. Solis-Cohen, of Philadelphia, published in 1878, and that of Sir Morell Mackenzie which appeared in 1882, it marked an epoch in the advance of the specialty. Works had been published by the early laryngologists in various countries of Europe, some of them of distinguished merit, but it remained for Dr. Solis-Cohen to present the first really comprehensive treatise upon the upper air passages ever issued. It dealt with the whole realm of the subject, and was beyond question a determining influence in establishing laryngology upon a definite basis. Dr. Mackenzie's classical work which followed in 1882 was different in style from that of Dr. Cohen, but scholarly, practical, and complete, it embodied the wide and long continued experience of the most accomplished laryngologist of his time.

The therapeutics of the specialty, theretofore chao-

tic and eminently crude, were by Mackenzie reduced to a scientific basis. Many of his remedies and methods have never been improved. Finally, with the appearance of Bosworth's great work, the specialties of laryngology and rhinology were thoroughly placed before the world.

It is interesting and significant to note that this great scientific accomplishment was attained by three English speaking men, two of whom were Americans.

In the study of rhinology, Dr. Bosworth became more and more impressed with the eminent importance of the nasal cavities. Upon the early recognition of this he greatly prided himself.

His success as a teacher was attested by the large numbers of students who sought his instruction at Bellevue, over a period of many years. His enthusiasm was genuine and infectious, and through his disciples as well as through his writings served to carry far and wide the knowledge of the new science. The vast numbers of patients who resorted to the Bellevue clinic gave abundant opportunity for observation and investigation, which Dr. Bosworth zealously improved.

In the course of Dr. Bosworth's writings many new ideas were presented, most of them original, some the practical application of the suggestions of others. While distinguished in many directions he will always be best known by his notable contributions to rhinology. Prior to his time the nasal region had been largely ignored.

The causes of mouth breathing, the physiology and pathology of the sinuses, the existence of remediable nasal obstructions, received little or no attention, even among the leaders of laryngology. The distinguished American observer, Catlin, had long before recognized the existence of mouth breathing and had warned of some of its evil results, but neither he nor any one else had clearly recognized its causes or suggested means for their relief until Dr. Edward Woakes, of London, published some ideas upon what he called "necrosing ethmoiditis," and advocated the removal of some forms of obstruction by the use of the saw. As commonly happened in those days of the tardy recognition of good work, the ideas of Dr. Woakes were not generally accepted. Dr. Carl Seiler, of Philadelphia, a man of great discernment and originality, who first used the perforated nasal splint afterwards perfected by Asch, attempted to remove septal obstructionc by means of a metacarpal saw. Before the days of local anesthesia this was difficult and unpopular. Bosworth also had been studying the matter. He found that many serious conditions of obstruction were caused by septal ridges and spurs. No other treatment of them was practicable but their mechanical removal. Certainly at this particular time fortune smiled upon him, for coincidently with the idea which had come to him cocaine was introduced, he devised his admirable little saw and, with it and local anesthesia, the riddle of nasal obstruction due to septal spurs was solved. True, better methods have been found since then. Bosworth's method was not perfect, especially as little heed was paid to preservation of the mucous membrane; but the results he obtained by it in those early days were often remarkably good. Through his eloquent advocacy and through the oft repeated visible evidence of the value of the method, its popularity was almost instantaneous. Through this and through his other valuable contributions, the attention of the world was directed to the nasal region. Brilliant scientists like Jarvis, Harrison, Allen, Bryan, John Mackenzie, Roe, Shurly, Daly, and others in this country; Moure, of Bordeaux; Zuckerkandl, of Vienna, and others of the continent of Europe and in Great Britain, took up the study, and the science of rhinology was triumphantly launched.

One of the most interesting phases of Dr. Bosworth's life was in connection with the New York Laryngological Society, the oldest society of laryngology in the world. Dr. Bosworth was one of its founders in 1873, and one of its most enthusiastic supporters until in 1886 it was merged into the Section of Laryngology and Rhinology of the New York Academy of Medicine.

Dr. Bosworth was an Episcopalian and in politics a staunch Republican. Regarding him from the human side, he was eminently blessed in the possession of a fine constitution and in the enjoyment of excellent health. His general interests were wide. He had many acquaintances among actors and dramatists. In his earlier days he was fond of horses and gained much diversion from daily drives along the uptown Speedway behind his handsome fast trotter. Among the first to take up golf as an exercise he played with vigor for many years, although never highly expert. His interest in fine arts was discriminating and accurate. He was a member of the Union, the Metropolitan, the Players, and the Social Arts Clubs, and for many years a familiar figure at the University Club.

Dr. Bosworth was a Fellow of the New York Academy of Medicine, the American Medical Association, the American College of Surgeons, and of various other medical societies. He was a charter member of the New York Laryngological Society in 1873, and a founder of the American Laryngological Association in 1878, and its president in 1883, and of the American Climatological Association. He received distinguished recognition abroad, and was an Honorary Fellow of the British, French, and German National Laryngological Societies. At the Eighth International Congress, held in Copenhagen in 1884, and at several subsequent congresses, he made notable contributions.

He married on September 21, 1871, Miss Mary Hildreth Putnam. Mrs. Bosworth died about fifteen years ago. Two children survive him, a son, F. H. Bosworth, Jr., professor and dean of the School of Architecture in Cornell University, and a daughter, the wife of Hon. Walter R. Herrick, of New York.

It may be that in the time to come Dr. Bosworth will be known by some one of his lesser gifts to medicine, but in company with Solis-Cohen and Sir Morell Mackenzie he, more than any who had gone before, gathered together the disjointed and scattered fragments of laryngological knowledge, developed the science of rhinology, and, welding all into a perfectly coordinated form, established them as definite and distinguished departments of medical science.

He was a man of ideas; a dreamer of dreams, dreams in which he himself believed; strong enough and earnest enough to make his dreams come true, and to impress the truth and the value of them upon the world.

The Health Resort of Nauheim

ELSA DENHAM
New York

Nauheim, one of the most important of the German health resorts and world famous for its treatments for heart troubles, lies in the shadow of the Taunus Mountains, about forty-five minutes from Frankfort on Main, and is easily reached by the main traffic railway lines from all the seaports of the Continent.

Universally known as the leading resort for the cure of heart disorders, due to its springs, which are perhaps unique in their curative properties, this spa is visited annually by some forty thousand persons, and summer and winter patients afflicted with heart disease flock to this delightful resort in search of relief and cure.

As one leaves the station, Nauheim seems to unfold like a picture book. Going down the hill towards the main street, one sees the fountains rising from the gardens that surround the bath establishments.

Here the Great Sprudel shoots up, steaming, from a depth of over five hundred feet; the temperature of this spring is 30.5° C.; it contains two and sixteen hundredth per cent. salines, and 3,434 cubic centimetres of free carbonic acid.

Next to it, the Friedrich Wilhelm Sprudel, rising from a depth of six hundred feet, has a higher temperature, a larger percentage of salt and 4,451 cubic centimetres of free carbonic acid gas.

The Ernst Ludwig Sprudel, 687 feet deep, is similar to the Big Spring with, however, a slightly higher temperature.

Besides these springs, used essentially for bath cures, there are a number of other sources used for drinking cures; two saline springs, excellent in effect on the intestinal ducts, an alkaline acidulous spring, the waters of which are used in the treatment of catarrhs, and three iron springs used in the treatment of the uric acid diathesis. Some of these spring products make excellent table waters.

The outstanding feature of the three big springs in Nauheim, is the natural warmth of the water, which corresponds exactly with the temperature prescribed and required by most patients who resort to the baths. The water flows from the depth of the earth directly into the tubs; it is not pumped up and warmed artificially as is the case in many other resorts. The water is used immediately as it comes from the earth, and there is therefore no loss of heat or carbonic acid.

One of the factors that make Nauheim so important from a medical point of view is the unusually large number of different kinds of baths available and the fact that it is possible to grade the baths correctly with regard to the amount of salt, iron, temperature and carbonic acid required. Thus the baths may be adapted minutely to any degree of illness, and to the various different and individual requirements of those taking the cure.

The sprudel steam baths, the strongest carbonic acid brine baths of naturally warm water, popularly known as champagne baths, are only one of the many varieties.

There are the thermal sprudel baths; fountain or

Fig. 1.—The Kurhaus.

Fig. 2.—The Kurhaus in the Park.

spring baths, a milder, radioactive, nonsaline form; sprudel baths, as they come from the earth, and brine baths without carbonic acid. These are just a few of the many varieties of baths that Nauheim has to offer.

Not only diseases of the heart are treated at this famous spa. The waters and baths at Nauheim are taken also for gout, rheumatism, incipient arteriosclerosis, female troubles, spinal diseases, and disorders of the nervous system.

A curious feature at Nauheim is the series of graduation houses, where the water from the springs is used for certain healing purposes by passing it over high walls of blackthorn bush. Here people come to breathe the air which is strongly impregnated with ozone and this air is said to be as effective in cases of chlorosis as sea air. There is a rest garden near one of these walls where patients may lie comfortably in chairs.

The treatment of heart diseases, however, is Nauheim's specialty, and the fact remains that if patients will come to Nauheim in time many diseases of the heart may be radically cured, or, if not entirely so, they may be greatly relieved and the course of the disease checked to a large extent.

All of the installations necessary for the successful diagnosis and treatment of diseases may be found in Nauheim.

The bath establishments, of which there are four, are the last word in luxury and comfort. They are provided with lounging rooms, reading rooms, and individual dressing rooms adjoining each bath cell.

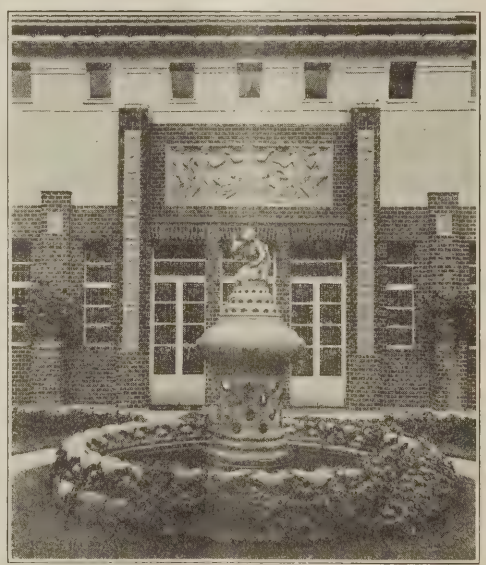


Fig. 3.—Entrance to one of the bathing houses

The pump houses are extensive modern buildings with every equipment required from both a scientific and a technical point of view. They comprise, besides the pump room proper, long, covered promenade lobbies, gargling rooms, a milk cure establishment and a bar where mineral waters are served.

The inhalatorium building is considered a model institution. In the rear of this building there are public inhalation rooms with Heyer's apparatus for open evaporation, five individual inhalation rooms on the Spiess system, von Hoessle's ideal apparatus, the Schnitzer apparatus, Goebel's duplex, the Unicum and Goebel's pneumatic machine. Carbonic acid inhalation is also provided. A radium emanatorium is in the north wing of the building. Radiation therapeutics, electric quartz lamps, solux lamps, spectrosol lamp radiation, Mebolit lamp and diathermal apparatus may be found in another building.

For purposes of diagnosis there are the latest medical appliances of all kinds, the most up to date x ray machines, electrocardiographs and sphygmographs. There is a medicomechanical Zander institute, with electric light, four cells, and alternating current baths.

Sand, mud and fango baths and packs may also be had at Nauheim.

The beautiful situation of the resort, on the slope of the Taunus Mountains, the fresh invigorating air, the large parks and woods, the almost country stillness, combined with all the comforts, conveniences and luxuries of a world renowned spa, make Nauheim not only a place for the sick but also a very popular resort for those enjoying good health who are seeking recreation.

The Kurpark, comprising an area of 469 acres, is one of the finest and largest parks in Germany. There are beautiful walks through idyllic groves and forests of mighty oaks, and the temples and shelters scattered here and there afford cover in bad weather.

The Kurhaus, the principal meeting ground for those taking the cures, lies high in the park, and has a fine view of the gardens and the spa region. It

contains two theatres, an excellent restaurant, a reading room, a billiard room and lounging room. Numerous entertainments are given here during the year.

There are eleven exceptionally fine tennis courts in the park. The golf links, with their pretty club house and restaurant, are situated a quarter of an hour's walk from the Kurhaus, in a charming part of the Frauenwald. The large lake, and the rivers Usa and Wetter offer good boating and fishing facilities.

An attractively situated trap shooting gallery has recently been set up on the Goldstein, five minutes walk from the railway station.

The neighborhood is rich in beauties of nature and historical monuments. Good railway connections and regular tours in comfortable motor buses offer ample facilities for visits to the Taunus and the Vogelsberg, to the numerous large towns in the vicinity and to the picturesque regions of the Rhine, the Main and the Lahn.

News Items.

Typhoid Carrier.—Thirty-three cases of typhoid, three of them fatal, have been traced by the Michigan State Health Department to a woman who assisted in serving a church dinner at Eaton Rapids, Michigan.

Prize for Essay on Tuberculosis.—A prize of ten thousand liras is announced for the best essay on the pathological anatomy, pathogenesis, or treatment of pulmonary tuberculosis, to be awarded by the Forlanini endowment. Eight copies of the study must be received by the Ospedale Maggiore at Milan, Italy, by December 31, 1926.

Mortality Statistics.—The Department of Commerce announces that in 1924, in the death registration area, there was a death rate of 11.9 per thousand of population, compared with 12.3 in 1923, 11.8 in 1922, and 11.6 in 1921. The rate for influenza decreased during the year from 44.7 to 19.6; and the rate for pneumonia decreased from 109 to 98.4. The rates for heart disease and cancer showed slight increases.

Doctor Green Honored.—A dinner was given at the Harvard Club, Boston, in honor of Dr. Charles M. Green, professor emeritus of obstetrics and gynecology at Harvard, on his seventy-fifty birthday. About two hundred and fifty pupils and former house officers attended. Dr. Frederick C. Shattuck, of Boston, was toastmaster, and addresses were made by Dr. Joseph B. deLee and Dr. Emilius C. Dudley, of Chicago, Dr. Barton Cooke Hirst, of Philadelphia, and Dr. John O. Polak, of Brooklyn.

Gifts and Bequests.—Montefiore Hospital of New York has received a gift of $50,000 from the Altman Foundation of B. Altman and Company.

Gifts of fifteen hundred Christmas boxes, including cash, were made by John Doukas, a Greek confectioner of New York, as a share of his profits for the year. Several hospitals were included among the twenty-five organizations receiving these gifts.

One of the patients of the late Dr. E. Guernsey Rankin, a professor at the New York Homeopathic Medical College and Flower Hospital, has given the school a memorial check for one hundred thousand dollars. The College announces the completion of its endowment fund of two hundred and fifty thousand dollars.

The Eye, Ear, Nose, and Throat Hospital of New Orleans has received a gift of fifty thousand dollars from Mrs. John Dibert, which increases her gifts to the institution to the amount of one hundred and thirty-five thousand.

Princeton University has been granted one million dollars by the General Education Board, contingent upon its raising two million, for the purposes of research and advanced teaching in biological and physical science.

Hospital News.—Cook County Hospital of Chicago is starting work on additions which will give it a capacity of thirty-five hundred beds. The new accommodations will include an eight story children's hospital, with a minimum capacity of four hundred and eighty beds; a new men's building, seven stories, with a minimum capacity of three hundred. There is also to be a new morgue, and a new receiving building, with tunnel passages to all parts of the hospital. The cost of these improvements is estimated at two and one half millions.

St. Mark's Hospital of New York has purchased property on Eleventh Street, and work on an addition will start at once.

The French Hospital of New Orleans, which has been in operation sixty years, is remodeling its building and doubling its capacity.

The Charity Hospital of New Orleans has opened a new building for white women medical patients. This building will take care of one hundred and twenty patients, and cost about $335,000.

The Troy Hospital, Troy, New York, recently celebrated its diamond jubilee.

The Borough Park Maternity Hospital of Brooklyn has opened a three story fireproof addition.

The Coney Island Hospital is planning to double its capacity, and will add a nurses' home.

The Kings County Hospital will erect a new eight story building for gynecology and obstetrics, accommodating nearly four hundred patients.

A Chinese Hospital has been opened in San Francisco, built at a cost of two hundred and fifty thousand dollars. The four divisions of the staff are presided over by American educated Chinese physicians. The provisions are mainly for charity patients, and there is a free clinic.

The will of the late Rudolph J. Schaefer provides $50,000 for the Lenox Hill Hospital, of New York.

The will of the late Dr. William Carr provides some $20,000 for the Hospital for Ruptured and Crippled Children, New York.

The Free Hospital for Women, of Brookline, Massachusetts, has recently celebrated its fiftieth anniversary.

Personal.—Dr. Max Einhorn of New York has been elected corresponding member of the Société de Gastroenterologie de Paris.

Dr. Adolf Lorenz of Vienna has returned to America and resumed the practice of orthopedic surgery, at the office of Dr. Dexter D. Ashley, New York.

Dr. Louis I. Harris has been appointed health commissioner of New York City.

Dr. E. M. Bluestone, assistant director of Mt. Sinai Hospital, New York, has resigned to act as director of the Hadassah Medical Organization. This organization controls most of the medical work in Palestine and that locality.

Dr. Frederick W. Sears of the New York State Department of Health gave an address on Some Problems in Rural Hygiene, as one of the De Lamar lectures, at Johns Hopkins University.

Dr. William H. Humiston, clinical professor of gynecology at Western Reserve University Medical School, and Dr. John M. Ingersoll, associate professor of otolaryngology, have been made emeritus professors.

Dr. Maurice Ostheimer, who has been on the faculty of the University of Pennsylvania for twenty-five years as teacher of pediatrics, and also in practice in Philadelphia, has retired to his country home at Whitford.

Dr. Francis Carter Wood, of the Cancer Institute, New York, is in Europe studying the recent developments in cancer treatment.

Sir Frank Colyer, F.R.C.S., L.R.C.P., L.D.S., London, England, has joined the Board of Collaborators of the *Review of Clinical Stomatology*, the official organ of the American Stomatological Association. Dr. Colyer is a leading and active worker in stomatology in England and was president of the International Stomatological Association during the years 1911 and 1913.

Dr. Alfred J. Asgis will be in charge of the courses to be given at the stomatological school recently chartered by the University of the State of New York and functioning under the auspices of the American Stomatological Associaition. Due to these added responsibilities, Dr. Asgis has resigned from the Department of Gastroenterology of the New York Polyclinic Medical School and Hospital.

Society News and Notes.

The newly organized Pennsylvania Public Health Association, composed of officials engaged in health work, has had its first annual meeting, with election of the following members of the medical profession as officers for 1926: Dr. Charles H. Miner, president; Dr. Wilmer Krusen, vice-president; Dr. J. C. Vaux, second vice-president; Dr. William C. Miller, secretary and treasurer; Dr. J. C. Raunick, assistant secretary and treasurer.

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The Massachusetts Society for Mental Hygiene held its annual meeting on November 10th at the Century Club, Boston. The meeting was preceded by a luncheon, which was followed by business and social sessions. The speakers were Dr. Ransom A. Greene, superintendent of the Walter E. Fernald State school, who spoke on the More Favorable Outlook for the Mentally Defective, and John A. Garvey, personnel manager for the Dennison Manufacturing Company, whose subject was the New Viewpoint in Personnel Work.

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Through the American Society for the Prevention of Cruelty to Animals it has been announced that at the next Westminster Kennel Club show, which will be its jubilee and the first annual one to be held in the New Garden, for the first time in this country, cups for uncropped dogs belonging to breeds heretofore shown cropped will be offered. Recently the American Veterinary Medical Association by resolution condemned cropping and voted in favor of non-cropping, stating that the former custom involved unnecessary cruelty and is a needless practice, contrary to the ethics of the profession. Cropping was abolished years ago in England as an act of barbarous cruelty.

* * *

At the joint meeting of the Physics and Radiology Section of the International Congress of Radiology held in London last July, it was unanimously resolved that an International Committee be appointed to consider the establishment of an x ray standard of intensity and an x ray unit. In order to give effect to this resolution, it was unanimously carried that the X Ray Unit Committee formed in February, 1923, be requested to communicate with the physical and radiological societies of the principal countries throughout the world with a view to the nomination by those societies of representatives to constitute such an International Committee.

* * *

The sixteenth annual meeting of the National Committee for Mental Hygiene, held at the Hotel Pennsylvania, New York, on November 12th, was a luncheon meeting followed by addresses by the president, Dr. Charles P. Emerson; the medical director, Dr. Frankwood E. Williams; Mr. Barry C. Smith, general director of the Commonwealth Fund; Dr. Bedford Pierce, formerly superintendent of the Retreat, York, England; Rev. Dr. Karl Reiland, rector of St. George's Church, New York; Dr. William A. White, superintendent of St. Elizabeth's Hospital, Washington; and Mr. Clifford W. Beers, secretary of the National Committee.

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The sixth annual meeting of the American Student Health Association was held at the Hotel Astor, New York, on December 29th and 30th, at the same time as the National Collegiate Athletic Association. One of the features was a dinner conference on the 29th.

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The new officers of the American Public Health Association are: president, Dr. C.-E. A. Winslow; first vice-president, Dr. John A. Ayyot, Deputy Minister of Health of Canada; second vice-president, Dr. Max C. Starkloff, Health Officer of St. Louis; third vice-president, Dr. A. J. Chesley, Health Officer of Minnesota; Dr. Dublin was unanimously reelected treasurer. The next meeting of the association will be held in Buffalo in October.

* * *

The second annual dinner of the New York Alumni of the Sigma Xi (National Society for the Promotion of Scientific Research) was held at the Faculty Club of Columbia University on the evening of December 14th. The program was divided into two parts: a discussion of the responsibility of scientists in disseminating scientific knowledge to the public; and an experimental demonstration of recent advances in contemporary physics by the Physics Department of Columbia University. Among the speakers who took part in the first half of the program were D. S. Kimball, dean of the College of Engineering of Cornell University; Otis W. Caldwell, director of the Lincoln School, Columbia University; Franklin H. Giddings, professor of sociology and the history of civilization, Columbia University; and Watson Davis, managing editor of *Science Service*.

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At a recent meeting of the Society of Medical Officers of Health of Great Britain, and at the final meeting of the Baby Week Summer School, the question as to whether or not advice on methods of birth control should be given at infant welfare centers was the topic for discussion. The consensus of opinion was practically unanimous against general advice on the subject at such centers, and a small number favored referring exceptional cases, where family conditions were known, either to a special clinic or to a gynecological department.

* * *

The Women's Foundation of Health, New York, has announced the awarding of a bronze medal in each state to a woman who has during the past year or years rendered the greatest service to women. This is to be known as the Agamede Medal; a national committee will then select from the group the one to whom a gold medal will be given. The women may be scientists, physicians, actresses, housewives, professional or business women, or women of wealth and social position who are qualified as nominees.

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During its recent convention the National Tuberculosis Association issued a four page daily bulletin, in newspaper form, with information and news, brief articles, and even a "humor" section with illustrations.

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The Berlin press has announced that a national exposition on health, social service, physical training and other related subjects will be held in Dusseldorf in 1926 under government auspices, with the cooperation of the provinces and private organizations.

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Officers for 1926 of the Yorkville Medical Society are: president, Dr. Adolph Stern; first vice-president, Dr. I. Glassman; second vice-president, Dr. J. L. Wolfheim; corresponding secretary, Dr. Maurice Meltzer; recording secretary, Dr. S. Morse; treasurer, Dr. J. Subkis; trustee, Dr. Charles N. Gelber; chairman of the committee on ethics, Dr. Harris Weinstein; chairman of the committee on legislation and economics, Dr. H. Keller; chairman of the committee on ways and means, Dr. M. Peshkin; chairman of the committee on admission, Dr. A. Schoen; chairman of the committee on new members, Dr. Bret Ratner; chairman of the special committee on new members, Dr. R. L. Dourmashkin.

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The Chicago Heart Association has announced the appointment of the following advisory committee on cardiacs in industry: Dr. James G. Carr, Chairman; Dr. W. B. Fisk, Dr. N. C. Gilbert, Dr. Harry E. Mock, and Mr. George Schneider.

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At the meeting on December 2d of the New York State Society of Industrial Medicine at Syracuse, Dr. Byron C. Darling read a paper on Trauma of the Lower Spine from a Radiographic Point of View.

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The Physicians' Square Club of Greater New York have elected as officers for the coming year: Dr. Frank Shapiro, sublime healer; Dr. Edward L. Spitzer, deputy healer; Dr. Adolph Greenstein, manometer; Dr. Charles J. Brim, prescriber; Dr. Joseph Safian, stethoscoper; Dr. Albert S. Hyman, Dr. Maximilian Stern, and Dr. Julius Jarcho, thermometers.

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The following officers, to serve during 1926, were chosen at the annual election of the Medical Society of the County of New York: president, William P. Healy; first vice-president, Henry S. Patterson; second vice-president, John Douglas; secretary, Daniel S. Dougherty; assistant secretary, J. Milton Mabbott; treasurer, James Pedersen;

assistant treasurer, Ten Eyck Elmendorf; censors, to serve two years, David J. Kaliski, George W. Kosmak, Antonio Stella; chairman, committee on membership, Howard G. Myers; chairman, committee on civic policy, Frederic E. Sondern; chairman, committee on legislation, Terry M. Townsend.

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On January 26th at 4 p. m. Dr. Abraham Myerson, professor of neurology at Tufts College Medical School, Boston, will lecture at the New York Academy of Medicine on Inheritance of Mental Diseases.

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The fourth Harvey Society lecture was given at the New York Academy of Medicine on January 2d by Dr. J. B. Collip, professor of biochemistry at the University of Alberta, on the Internal Secretion of the Parathyroid Glands.

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Dr. Harris Taylor, principal of the Institution for the Improved Instruction of Deaf Mutes, and president of the American Association to Promote the Teaching of Speech to the Deaf, was guest of honor at a testimonial dinner at the Harmonie Club, New York City, on December 19th. Dr. Taylor was one of the first educators interested in the teaching of lip reading to the deaf, and has been engaged in the work for thirty-six years.

* * *

The Women's Medical Association of New York City elected as officers for 1926 the following: Dr. Anna Hubert, president; Dr. Mary Reesor, first vice-president; Dr. Belle Thomas, second vice president; Dr. Irene Tognazzini, recording secretary; Dr. Sophie Rabinoff, corresponding secretary; Dr. Allis Hascall, treasurer.

* * *

The American Society of Zoologists held its annual meeting at Yale University, December 27th-30th. The chief subject for discussion was cancer. Papers were read by Dr. L. C. Strong of Harvard; Dr. James B. M. Murphy of the Rockefeller Institute for Medical Research; Dr. Halsey J. Bagg of Cornell Medical College; and Dr. Erwin F. Smith of the Federal Bureau of Plant Industry.

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One of the features of the recent meeting in Baltimore held under the auspices of the Maryland Cancer Committee was a report by Dr. George A. Soper, managing director of the American Society for the Control of Cancer, who has recently returned from a three months' visit to the research laboratories and cancer clinics of Europe. Dr. Soper outlined the discoveries of the British scientists, Gye and Barnard. Other speakers were Dr. Francis Carter Wood, director of the Cancer Research Institute of Columbia University, and Dr. William H. Welch, director of the Johns Hopkins School of Hygiene and Public Health.

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On Monday, January 25th, the Section of Anthropology and Psychology of the New York Academy of Sciences will meet. Earlier January meetings were that of the Section of Biology on January 11th, and of the New York Microscopical Society on January 15th.

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The annual meeting of the New York Academy of Medicine was held on January 7th. After a business session, Dr. D. Bryson Delavan made an address on Early Days in the Academy, Dr. Samuel W. Lambert on Academy Activities in Our Present Building, and Dr. Linsly R. Williams on the Future Work of the Academy. Other January meetings at the Academy were those of the Section of Dermatology and Syphilis on January 5th, with presentation of patients from the Vanderbilt Clinic, the Skin and Cancer Hospital, and Fordham hospital; the Section of Surgery on January 8th, in which presentation of cases by Dr. Carl Eggers, Dr. Franz Torek, and Dr. Herbert Willy Meyer was followed by papers by Dr. Edward C. Davidson on Prevention of Toxemia in Superficial Burns, and by Dr. Meyer on Undescended Testicle. The new automatic electromechanical apparatus for transfusion of whole unmodified blood was demonstrated by Dr. A. L. Soresi. The Section of Otology met on the same evening, with demonstration of a new instrument for the treatment of OMCC with superheated air, by Dr. John Guttman; presentation of cases by Dr. Hugh B. Blackwell, and Dr. John McCoy, who also read a paper on Zinc Ionization Treatment for Chronic Discharging Ears and Allied Conditions. The Section of Neurology and Psychiatry met on January 12th, with case presentations by Dr. Byron Stookey, Dr. E. D. Friedman, Dr. Ira Cohen, and Dr. A. S. Taylor; papers were read by Dr. C. B. Masson on an Air Manometer for Spinal Manometric Tests; Dr. S. Silbert on a Method for the Study of Changes of the Size and Shape of the Ventricles in Brain Tumors; Dr. Wilder G. Penfield on Staining of Tumors of the Nervous System; and Dr. F. H. Pike and Dr. C. A. Elsberg on Intracranial Pressure and Susceptibility of Animals to Convulsive Seizures. The Section of Pediatrics met on January 14th. The papers of the evening were by Dr. Sydney V. Hass and Dr. Julius Blum on the Prophylactic Value of Older Plasma and Whole Blood of Convalescents in Measles.

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The Clinical Society of the Jewish Memorial Hospital, New York, met on January 5th at the Dispensary Building. The scientific session was conducted by Dr. A. Greenberger and Dr. L. Neuwelt. Case reports were given by Dr. S. Weiss and staff, Dr. E. Bleier, and Dr. M. Seigalstein.

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The Harlem Medical Association of New York City met on January 6th at the Ellsmere. A case report was given by Dr. Herbert E. Stein, and papers read by Dr. Sidney V. Hass on Celiac Disease; the Value of Banana in its Treatment; and by Dr. Jacob Sobel on Essential or Primary Hypotonia in Young Children.

* * *

The Eastern Medical Association held its stated meeting at the New York Academy of Medicine on January 8th. The papers of the evening were by Dr. Irving Roth on the Clinical Features of Cardiac Irregularities; and Dr. Cary Eggleston on Treatment of Heart Failure with Special Reference to the Use of Digitalis.

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The Association of Italian Physicians in America held its stated meeting on January 8th at the New York Academy of Medicine. The papers of the scientific session were by Dr. Herbert Bergami on Problems of Present Day Traumatic Surgery; and Practical Therapeutics, by Dr. L. K. Neff.

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The American Ethnological Society and the Section of Anthropology of the New York Academy of Sciences held a joint meeting at the American Museum of Natural History on the evening of November 23d.

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The Pennsylvania Tuberculosis Society held its annual meeting at the Bellevue-Stratford Hotel, at Philadelphia, January 19th and 20th. The establishment of the eleven tuberculosis hospitals recently authorized was considered, and clinical programs were held at the Jefferson Hospital and the Henry Phipps Institute. In addition, papers were read by leaders in the field of tuberculosis work.

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Among the speakers at the Women's Industrial Conference, held in Washington this month under the auspices of the Women's Bureau of the Department of Labor, will be Dr. Alice Hamilton of Harvard, and Surgeon General Cumming, of the Public Health Service.

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The Interstate Postgraduate Association of North America will include Rome, Florence, Venice, Munich, Prague, Berlin, Amsterdam, Brussels, and other medical centres in its trip. Dr. William J. Mayo is president of clinics, Dr. Charles H. Mayo, general chairman of foreign assemblies, and Dr. George W. Crile, chairman of the program committee. Applicants must be in good standing in their state societies. Further information may be obtained from Dr. William H. Peck, the managing director, of Freeport, Illinois.

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The Canadian Medical Association has appointed a committee to report on fakes, nostrums, and quackery, and to recommend suitable action by the association.

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The Philadelphia County Medical Society has elected Dr. Moses Behrend, president; Dr. Frederick S. Baldi, vice-president; Dr. Henry G. Munson, secretary, and Dr. Edward A. Shumway, treasurer.

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The members of the Sigma Phi Fraternity, in Southern California, celebrated the eightieth birthday of Dr. Richard S. Dewey, of Pasadena. Doctor Dewey was formerly in charge of the Milwaukee Sanatorium, Wisconsin, and before that, in charge of the Illinois State Hospital at Kankakee.

Book Reviews

ABDOMINAL SURGERY

Abdominal and Pelvic Surgery for Practitioners. By Rutherford Morison, Hon. M.D. and D.C.L., Hon. LL.D., M.B., F.M.C.S. (Ed. and Eng.), Consulting Surgeon Royal Victoria Infirmary. London and New York: Humphrey Milford, Oxford University Press, 1925. Pp. 203.

This little book is written with a definite purpose by one of the great surgeons of the day and, moreover, it seems to have fulfilled its purpose. The introduction is a model of what introductions should be as it explains clearly why conditions as regards the medical profession are as they exist today, and why for this reason the patient should depend more on the general practitioner than he does depend at present. Also Mr. Morison recommends that the general practitioner should fit himself to be a reliable counsellor of his patient as to the need for operation, the kind of operation and the choice of operator. As Mr. Morison remarks pertinently operators are like golfers. Many can play at golf, after prolonged instruction and practice, but few can ever play golf. Unless the golf is in, it can never come out. There are many operators but few surgeons.

The author realizes fully that the condition of the medical profession has changed and is changing and that the status of the medical man is undergoing something like a revolution, but while comprehending all this he points out that the public is so dissatisfied now with the chaotic and unwholesome state of affairs in the medical profession, that his belief is that the time is ripe for "the doctor" to come into his own again by realizing his responsibilities, as the guide and friend of the patient.

In this country and in Great Britain radical changes into methods of medical and surgical practice have been and are being introduced so that Mr. Morison's comments apply to conditions in America to some extent. In the body of the book the author gives useful advice drawn from a wide experience of the practice of abdominal and pelvic surgery in war and peace. Throughout the book the need for promtitude and skill in operating is emphasized.

PULMONARY TUBERCULOSIS

La Tuberculose Pulmonaire. By Leon Bernard, Professeur à la Faculté de Medecine de Paris, Second Edition. Paris: Masson et Cie., 1925. Pp. 400.

The first edition of this book was well received and was soon exhausted. In the second edition, which is much larger than the first, the author has taken into consideration the newer advances in phthisiotherapy and the remarkable progress made in France regarding the social aspect of the disease. He gives full credit for these improvements over the former deplorable condition in France, to the *Comité National de Défence Contre la Tuberculose* and expresses grateful appreciation for the invaluable help which has been given to this committee by the Rockefeller Foundation, saying eloquently, that the hearts of France owe to the latter foundation an unforgettable gratitude. The book, which had its origin in the lectures delivered by Prof. Bernard before and after the World War at his clinic at the Laennec Hospital and at the *Ecole de Médecine,* is now completely rewritten.

In the first chapter is given an excellent description of our present conception of the infection and immunity of tuberculosis. Bernard makes no less than five divisions of the chronic form of tuberculosis: first, the extensive ulcerative and caseous types; second, the same type but localized; third, the extensive ulcerative fibrinous type; fourth, the localized fibrinous type; and fifth, the tuberculous bronchitis, in which he includes the tuberculous emphesema. Of the acute types he makes six divisions: the first he calls caseous pneumonia; the second, galloping phthisis; the third, the granulated type of tuberculosis; the fourth, typhoid bacillosis and septesimic phthisis described by Landouzy. As fifth he mentions the cortical pleuritis; and lastly, the general pleurisy or primary tuberculous pleuritis. By the latter he means the pleurisy à frigore, mentioned in the old classics. The descriptions of these types are interesting and thorough.

In his chapter on the stethoscopic signs of tuberculosis, he makes the following significant statement: "We now know that the beginning of tuberculosis in childhood is due to a first infection and that this primary invasion results in sclerotic pulmonary ganlion which contain the bacilli. When in adult life this tuberculosis developes it may be due to a renewed activity of these bacilli or to a new additional infection." The stethoscopic signs are carefully described with characteristic French minuteness.

Chapter 5 deals with the prognosis of pulmonary tuberculosis, and Bernard concludes by saying that the physician in his endeavor to come to a decision must, without neglecting any of the physical signs and symptoms, also resort to a careful blood pressure examination and cutaneous reaction. This latter means of determining a prognosis would seem to the reviewer of little importance since cutaneous reactions, no matter how carefully made, do not reveal either the extent, locality, chronicity or acuteness of the infection.

Interesting are Bernard's conclusions concerning tuberculosis and maternity. He says when a prospective mother is in the latter stages of pulmonary tuberculosis and all indications are for a fatal termination because of the tuberculous disease, the mother should be carefully watched during pregnancy, which should not be interrupted, so that at least the life of the child may be saved. He is convinced that the justification of interrupting pregnancy in tuberculous mothers is exceedingly rare. Of course, he enthusiastically supports the practice of separating the child from its tuberculous mother immediately after birth, and he quotes the statistics that the mortality of the babies separated from their mothers immediately is 5.7 per cent., while among those who were only taken from their mothers later and evidently infected, it was 7.6 per cent. Under modern treatment of tuberculosis nothing new is offered. It is rather surprising that aside of artificial

pneumothorax the author has nothing whatsoever to say on the surgery in tuberculosis. Pneumolysis, phrenicotomy, and thoracoplasty receive no mention whatever. This is a serious omission, otherwise the book can be highly recommended to physicians and students as a guide in the study of clinical and social aspects of pulmonary tuberculosis. The discussion of the social phase of course is of particular interest to the conditions in France.

DRUGS ACTING ON THE HEART

Les Médicaments Cardiaques. Par le Docteur L. Cheinisse. Paris: Masson et Cie, 1925. Pp. 179.

In this small volume Dr. Cheinisse summarizes the action and uses of the important drugs that act on the heart. The book is planned for the general practitioner. Chapters are devoted to digitalis, strophanthus, as well as the lesser drugs of the digitalis group, calcium chloride, caffeine, camphor, adrenalin, atropine, eserine, and quinidine. For each medicament the author gives the indications, contraindications, methods of administration, and action. The presentation is clear and accurate, and shows a familiarity with the important literature. The book should be useful as a brief and up to date summary of the uses of the potent drugs that act on the heart.

EXPERIMENTAL MORPHOLOGY

Handbuch der biologischen Arbeitsmethoden. Unter Mitarbeit von über 600 bedeutenden Fachmännern herausgegeben von Geh. Med.-Rat Prof. Dr. Emil Abderhalden, Direktor des Physiologischen Institutes der Universität Halle a.d. Saale. Abt. VIII, Methoden der experimentellen morphologischen Forschung, Teil 1, Heft 4. Experimentelle morphologische Untersuchungen. Ernst Leupold-Würzburg: Lipoid-, Glykogen- und Pigmentstoffwechsel. Berlin-Wien: Urban & Schwarzenberg, 1925. Pp. 791-940.

In this number of this encyclopedic work the experimental morphologic methods of investigating the metabolism of the lipoids, glycogen and the pigments found in the human body are described in minute detail. It is a highly technical publication of value only to the physiologist.

MEDICAL RESEARCH IN JAPAN

Transactions of the Japanese Pathological Society. Volume XIII. The Thirteenth Annual Scientific Session Held in Tokyo, April 1, 2 and 3, 1923. Published by The Japanese Pathological Society. Editorial Office: The Pathological Institute of the Imperial University, Tokyo. Pp. x-235.

This report contains one hundred and forty-three different articles on various subjects, such as studies on ascariasis and other parasites, spirochetosis icterohemorrhagica, tsutsugamushi, bacteriological studies, histological studies, tumor transplantation, and many others too numerous to mention in a short review. It is of interest to pathological laboratories but of very little interest to the general practitioner.

LOCAL IMMUNIZATION

Immunisation Locale. Pansements Specifiques. Par A. Besredka, professeur a l'Institut Pasteur. Paris: Masson & Cie, Editeurs, 1925.

The object of this short treatise is to present, as the author says, a different path than that which has been followed up to the present on the way to immunization. The idea of local immunization, which practically means that there is not necessarily a production of antibodies, is still in a rather nebulous stage, although definite facts speak in its favor, certain phenomena can be explained on no other hypothesis, and the practical application has been made in various instances of vaccinotherapy. To illustrate the main idea, Besredka has chosen a number of typical infections involving the skin and the intestinal canal, respectively. These are anthrax and malignant pustule, staphylococcus infections, dysentery, and typhoid states.

Medicoliterary Notes.

Los Angeles has a complete clinic on wheels for its school children. It is operated by the Board of Education's Department of Health. This travelling clinic has a complete set of optometrist's and dentist's tools and fixtures, and all other equipment for promoting general health among school children. In such a way two physicians and a nurse can supervise the welfare of hundreds of children daily.

* * *

Robert Quillen, humorist and author, according to the *New York Times,* has erected a monument in his front yard to Eve, the first woman, and the townspeople are horrified. Beneath the inscription, "In Memory of Eve, the First Woman," is a carved apple, with a twig and one leaf. In an editorial in his own newspaper, answering the criticism of his neighbors, Quillen wrote: "Eve was a distant relative of mine, on my mother's side. The family has always been proud of her. She was the first lady of the land and the reigning beauty of her time."

* * *

An interesting article on Sex in Children, by Jessie Taft, Ph.D., director of the Child Study Department of the Children's Aid Society of Pennsylvania, is reprinted from *The World Tomorrow* in the *Mental Hygiene Bulletin* for November, 1925.

* * *

Under a recent decree of the communal administration of Ghent, Belgium, marriage fees have been tripled in cost. Heretofore one hundred, fifty, or twenty-five francs have been the amounts required to be donated to the commune, according to whether the marriage was in the socalled first, second or third class. The newly stipulated fees are exactly three times larger than the former ones. A marriage service *de luxe,* including a small orchestra in addition to an organ, will cost six hundred francs.

* * *

An innovation in the teaching of a specialty, namely, its presentation by means of the motion picture film, has been undertaken by Dr. J. F. Montague, of 540 Park Avenue, New York City. Dr. Montague is able to show in this way, in a comparatively short time, all the interesting cases he has seen during the past nine years. This is one of the interesting features of Dr. Montague's motion picture course in proctology.

* * *

The League of Nations' Secretariat has been asked to ban all spirit writing. This is probably the strangest of the many strange things that the League has been asked to do. A letter containing the request is said to have been received from a New York business man, declaring that "brain enslavement" caused by spirit writing and other kinds of messages from the dead is a cause of many great evils, one of the greatest of which is that all American "courts of justice" are under the control of spiritism. The letter states that "the American people need help from the whole world to bring an end to something which is really the greatest crime against civilization."

* * *

In his annual report for 1924, recently issued, Rear Admiral E. R. Stitt, Surgeon General of the Navy, states that there was less sickness in the navy during that year than in any since the War. The death rate from diseases

was unusually low, being only 1.78 in 1,000 of personnel. The year 1922 was the only year in which the death rate was lower than these figures show. There were no deaths from typhoid or paratyphoid fever. Pneumonia was the principal cause of death, totalling thirty-three, compared with twenty-nine in 1922.

* * *

The mysteries of crowd psychology are being constantly brought before us. Several years ago in Berlin a play was produced at one of the theaters without attracting any undue attention. This winter it has been revived, and on the first night caused a riot, which included catcalls and hisses and finally a walkout on the part of half of the audience and an attack on the manager and actors by the other half. The police were called in to quell the disturbance. The play is *Die Kleine Sklavin,* by Dietzenschmidt, and deals with the downfall of a girl of fourteen. The Church and moral welfare societies are reported as taking steps against the continuance of the play; but the critics, although condemning it as a proper performance, are unanimous in predicting a long run for it because of the remarkable acting of the leading players, one of whom is Erika Meigast, a girl in her teens who plays the title rôle. She is generally conceded to be Germany's greatest coming actress.

* * *

Hamlet in modern costume was such a success in England that *Faust* was given in twentieth century attire during the Christmas holidays by the Birmingham Grand Opera Society, one of the largest organizations of its kind of the British Isles. The plot was slightly modified to suit the caste and the occasion.

* * *

The tuberculosis clinic for children, under the management of the Yale School of Medicine and the New Haven Dispensary, has recently issued its first report. The clinic has been operating since December, 1924, and is the only out patient tuberculosis clinic in the country dealing exclusively with children under six years of age. The report shows that 250 children are now being cared for by the clinic, in support of the viewpoint that the successful combat against tuberculosis lies rather in the protection of the young child than in the care of the adult after he has developed the disease.

* * *

Dogs—pedigreed, mixed breeds and "mutts"—have increased in number so greatly and so rapidly in Berlin that they are becoming a nuisance on the streets, according to some visitors. In an effort to reduce their numbers, and also to add to the city budget, the administrative committee of the City Council has presented an order, which, if passed, will increase the tax on dogs to $17.50 a year. In 1924 there were 205,000 licensed dogs in the city, an increase of fifty per cent since 1920.

* * *

On December 24th the new Peabody Museum of Natural History of Yale University was formally opened and dedicated. One of the most interesting features is that the exhibits are arranged to illustrate the evolution of the forms of life from the ameba to man. This is the work of Prof. Richard Lull, director of the Museum. He has limited his specimens to those fitting into the chronological life of this planet. A feature of the exhibits is the collection of the late Prof. Othniel Charles Marsh, which includes probably the most noted collection of fossil vertebrate animals in the country.

* * *

That color blindness is responsible for many railroad crossing accidents has been discovered by the Swedish State Railways. They have, therefore, decided to install bluish white lights in place of green ones, and others of a particular shade of red, which is supposed to be most easily recognized by automobile drivers. It has been arranged that these lights flicker at different speeds when a train is coming and when the crossing is safe, so that when drivers cannot distinguish the colors, they can tell by the flickering when a train is approaching.

* * *

A new and valuable use for ultraviolet rays was revealed to the Academy of Inscriptions and Belles Lettres on December 23d by M. Samaran, according to the *New York Times.* M. Samaran says that he has discovered that it is possible to read the original texts in palimpsests through use of the rays. Many books and scrolls were erased by scribes during the Middle Ages in order to write in them the records and chronicles of their own times. Thus many priceless documents were lost, among them the missing books of Livy, a contemporary of Christ. By inspecting the palimpsests with the ultraviolet rays, the inferior layers can now be easily read, where before chemicals had been tried and failed to produce results.

* * *

Because of the large number of persons killed and injured in the Fourth of July celebration, 1925, Dr. Hugh S. Cumming, Surgeon General of the United States Public Health Service, recommends in his annual report a renewal of the campaign for a "safe and sane Fourth." The report states that in thirty-six states 111 persons were killed and 1,030 injured in this manner. Of the injured 148 will probably lose one or both eyes. In many cases death was found to have been caused by fireworks popularly considered "harmless," such as sparklers, blank cartridges, cap pistols, skyrockets, small firecrackers, and Roman candles.

* * *

Clemence Dane, the well known English writer and playwright, in a recent interesting article on the past year's fiction in the *Manchester Guardian,* choses as the outstanding novels of 1924 Hugh Walpole's *Portrait of a Man with Red Hair;* Robert Nathan's *Son of Amittai,* published in this country as Jonah; and Naomi Mitchison's story of fifth century Greece, *Cloud Cuckoo Land.*

* * *

As an aid in mosquito control during the coming year, the State Board of Health of Texas announces plans for the establishment of local hatcheries for the propagation of top minnows. This is being made possible through the cooperation of the game, fish, and oyster commission, which will furnish these minnows for breeding purposes, the only cost to the localities being that of transportation and the cost incident to shipping. The State health officer has recently advised all cities and communities of the State desiring breeding stock to notify the game, fish, and oyster commission of their needs as soon as possible, in order that sufficient time may be allowed for the propagation of enough minnows for use in stocking all local streams, ponds, tanks, and other places with standing water.

* * *

Among the ten outstanding magazine articles for December, selected by the Library Service Bureau of the Franklin Square Subscription Agency of New York City were The Biology of Health, by Raymond Pearl in the *American Mercury,* and The Chaos of Modern Marriage, by Dr. Beatrice Hinkle in *Harper's Magazine.* Another December article of unusual interest is Life Versus Lives, by Havelock Ellis, the fourth in the *Forum's* War and Peace Series. Isaac Goldberg has in the same issue of the *Forum* an account of the Youth of Havelock Ellis. Other recent magazine articles of interest to physicians are: Blundering Parents, Wayward Children, by Florence Hull Winterburn, in *Current History* for November; The Human Will, by A. Wyatt Tilby, in the *Edinburgh Review* for October; The Fallacies of Current Cancer Research, by Dr. Herbert Snow, in the *Contemporary Review* for October; I Saved My Life by Disobeying the Doctor, by Allan Swinton, in the *Cosmopolitan* for December; The Amazing Importance of Posture in Children, by Harriet Wilde, in the *Designer* for December; and Aseptic Surgery in the Fourteenth Century, by Dr. G. D. Hindley, in the *Nineteenth Century* for October.

* * *

Among recent publications of interest to the medical profession are the following: *Battling the Criminal,* by Richard Washburn Child (Doubleday); *Manual of Injurious Insects,* by Glenn Herrick (Holt); *Psychological Healing,* by Pierre Janet (Macmillan); *Almost Human,* by Robert M. Yerkes, the report of a study of a colony of apes at Habana (Century); *Theories of Instinct,* by E. C. Wilm (Yale University); *Food, Nutrition and Health,* by E. V. McCollum and Nina Simmonds (the authors); *The Doctor Looks at Biography,* by Dr. Joseph Collins (Doran); *School and Home,* by Angelo Patri (Appleton); *Psychology and History,* by Harry Elmer Barnes (Century); *Opium as an International Problem,* by W. W. Willoughby (Johns Hopkins); and *The Visiting Teacher in Rochester,* Report of a Study, by Mabel Brown Ellis (Joint Committee on Methods of Preventing Delinquency).

Abstracts from Current Literature

PEDIATRICS

Retropharyngeal Lymphadenitis in Young Children.—Herman B. Sheffield (*Archives of Pediatrics,* October, 1925) writes concisely his observations of fifty-nine cases of retropharyngeal lymphadenitis which came under his care the past winter when influenza was prevalent. Nineteen of the children had some time before been successfully operated upon for the removal of tonsils and adenoids. Dr. Sheffield says that he learned early to discourage surgical intervention even in apparently severe cases lest the disease terminate in Ludwig's angina. He also noted that marked swelling of the lymphatic glands followed in all cases in which surgery was resorted to early, often thereafter requiring repeated rather mutilating operations to effect a cure.

Miliary Tuberculosis in an Infant Twenty-eight Days of Age.—A case of miliary tuberculosis in a twenty-eight day old infant is described by Harry M. Gilkey (*Archives of Pediatrics,* September, 1925) who is inclined to think that living tubercule bacilli may be present in the fetus and newborn child without exciting histological changes and developing some time after birth may then give rise to characteristic tuberculous lesions. A true latent congenital tuberculosis would therefore be both probable and possible and perhaps a more common occurrence than is generally supposed.

Sweetened Condensed Milk as a Food for Infants.—A. W. Bosworth (*Archives of Pediatrics,* September, 1925) in a preliminary paper, makes some interesting observations about the value of sweetened condensed milk as a food for infants. Although the fat content is low as compared with breast milk, and the supply of vitamine C is probably low, the amount of sugar, protein, calories, vitamines A and B compare favorably. Lassalbliere (*Soc. Biol.,* 81, 1918) is quoted as saying that the method of preparing sweetened condensed milk brings about some chemical or physical change in the milk which cannot be duplicated by the simple addition of sugar to milk or evaporated milk. A table of a few experiments shows the greater pathological efficacy of sweetened condensed milk in comparison with evaporated and powdered milks; and the influence, but more feeble, of saccharose when added to unsweetened condensed milk. It follows that the mere presence of saccharose does not wholly explain the results obtained with the sweetened condensed milk.

Comparison and Interpretation on a Caloric Basis of the Milk Mixtures Used in Infant Feeding.—Grover T. Powers (*American Journal of Diseases of Children,* October, 1925) classifies milk mixtures according to the caloric value of the constituents without regard to water content and finds that the mixtures fall into seven groups. There is a table giving the composition of foods in gravimetric percentages. Fourteen interesting charts illustrate the following points:

The dilution of milk mixtures with water affects the calories per unit of mass, but not the percentage relationships of protein, carbohydrate and fat in the total calories.

The addition to milk mixtures of an energy yielding nutrient affects not only the total calories per unit of mass, but also diminishes the proportional representation in the total calories of the protein, lactose and fat.

The magnitude of any food component in a mixture, as expressed by its percentage representation in the total calories, is relatively increased by the removal or reduction of any other food component.

An energy yielding nutrient, if introduced in a ration fixed with relation to the other energy yielding components of mixtures made increasingly dilute with water, does not affect the representation in the total calories of the other components.

On the other hand, an energy yielding nutrient, if introduced in a ratio fixed with relation to the total constant volume of mixtures made increasingly dilute with water, brings about a reduction in the values of the protein, lactose and fat percentages of the total calories.

A great number of mixtures which experience has shown to be particularly successful in feeding infants fall into a majority group which approaches the caloric percentage pattern of the food mixtures in the sweetened condensed milk group; about sixty per cent. of the total calories are in whole milk and forty per cent. in added carbohydrate.

One third milk with five per cent. added sugar, and other somewhat less frequently used mixtures, have the identical caloric percentage configuration of sweetened condensed milk and of whole milk to which seventeen per cent. sugar has been added.

Human milk, cow's milk, whey, protein milk and skimmed milk are the most prominent representatives of the remaining five groups.

The Czerny-Kleinschmidt and Moro butter flour mixtures have the same proportions of the total calories in protein, carbohydrate and fat as has human milk.

It is a striking fact that the vast majority of successful milk mixtures used in infant feeding are unlike human milk, which stands apart from all other foods; indeed the popular mixtures are as unlike human milk as they are unlike unmodified cow's milk.

Concentrated Feeding.—Bela Schick (*Archives of Pediatrics,* June, 1925) advances the following indications for concentrated feeding: I. Healthy children; a, lowered instinct for food intake, impossibility of feeding in usual volume the required caloric value (premature child); b, high caloric feeding for fattening. 2. Nervous vomiting. 3. Pylorospasm. 4. Children with diseases associated with difficulty in feeding: a, diseases with lowered tolerance of the intestine, e. g., measles (in such cases we are at least able to supply the caloric value required for the basal metabolism); b, diseases without evident damage to the tolerance of the intestine, such as difficulty of feeding in functional disturbances (loss of consciousness or cloudy sensorium in diseases with high temperature—meningitis, typhoid fever, etc.), difficulty in swallowing (angina and other throat and nose infections), dyspnea (pneumonia, croup, etc.), cough (whooping cough, pneumonia), lack of appetite in different diseases (tuberculosis, influenza), infectious diseases of other origin (dysentery tetanus, etc.). 5. Children with disorders of water balance, such as cardiac insufficiency, nephritis, pleurisy, and bedwetting.

The Relation of Clean Milk to Progress in Infant Feeding.—John Lovett Morse (*Boston Medical and Surgical Journal,* October 15, 1925) says that the improvement in the methods of infant feeding since the early nineties has been as great as that in the milk supply. Hit or miss methods have gradually been replaced by rational procedures based on scientific knowledge. Proprietary foods have been more and more replaced by milk mixtures and the proprietary foods which used to be given mixed with water are now given mixed with milk. Milk now forms the basis of all foods for infants. It is true that no respectable cow would recognize many of the concoctions which are manufactured from it nowadays, but, nevertheless, the basis of them all is milk. Methods are continually changing, however, sometimes for the better and sometimes, it seems to some of us, for the worse. Nevertheless, whether the composition of the food is calculated in percentages or in grams of the different food elements or in ounces per pound of weight, whether it is given raw or boiled, acidified or alkalinized, at long or short intervals, milk is the basis and those who prescribe the food have, or think they have, a good reason for what they do.

Breast Feeding—Past, Present and Future.—Dr. Frank Howard Richardson (*Archives of Pediatrics,* October, 1925) tells of the Nassau County, L. I., demonstration that breast feeding was not only the most desirable form of sustenance for the young of the species (of course universally conceded before); but also that it was almost universally available. The data obtained were submitted to the Bureau of Statistics for evaluation. Some points elicited from the demonstration were, for instance, the decreased infant mortality in the breastfed group, as compared with those artificially fed; the decreased infant mortality of Nassau County for the period of the demonstration; and the diminution of morbidity in the breastfed babies studied—most marked in the gastrointestinal disorders, but also marked in the respiratory diseases; and in the infectious

diseases, especially whooping cough, measles, and chickenpox —three diseases, whose severity we have been almost completely powerless to check by any specific measures when once they do occur; and other points of much social interest, such as the fact that the American mother has the poorest records for maternal nursing. A gratifying result, according to Dr. Richardson, is that since 1924 (the demonstration had been made the previous year) appeals have come in for information as to what had been done, and for help in staging similar efforts elsewhere in the State.

Roseola Infantum.—John Zahorsky (*Archives of Pediatrics,* September, 1925) again calls attention to the disease peculiar to infants and possessing the following characteristics: the febrile course with sudden onset, the general symptoms, the crisis, the appearance of the rash, the convalescence; furthermore, its incidence during infancy, its noncontagiousness, its prevalence during all seasons, its independence of epidemics of rubella, and the freedom from sequelæ. In a further statement as to the incidence of this desease which is frequently mistaken for German measles he says that in the last fifteen years he has seen more than three hundred cases of roseola infantum. It is not an uncommon disease, he thinks, and believes many more cases occur, since the mildness of the symptoms in many infants does not alarm the parents sufficiently to send for a physician. It is almost exclusively a disease of the young child. Dr. Zahorsky urges naming this disease roseola infantum, a term that would be acceptable to mothers and would not cause confusion if applied to this definite clinical entity.

Radical Cure of Neuroticism in Children.—Clinical evidence to show that much of the neuroticism of children is psychogenic and can be reconditioned into happy usefulness by psychological means is not lacking, according to Tom Williams (*Archives of Pediatrics,* October, 1925) who also holds that no artificial methods like hypnotism, dream analysis nor set association experiments, are required to remove a child's phobia effectively; that the patient will introspect honestly if he knows that he will not be laughed at or blamed. But of his motivations the patient is not always aware, even when himself honestly introspecting. That is, when a mere desire animates him; one which is not a matter of conditioning at all, but which is of the primitive nature as seen in appetite for food, sex gratification, acquisition, fighting, affection, or movement, and worst of all, perhaps, in the struggle for air. When the impediments to these legitimate desires cause a conflict which is not frankly engaged in, secondary ruminations of a theoretical character may develop into a neurotic state. Taking one instance, a child had multiple tics which proved to be compensatory movements against a sense of guilt engendered by infantile jealousy of a younger brother. This was radically removed without recurrence fourteen years later. Without doubt physical conditions often have more bearing on the state of maladjustment than is usually known but experience has shown the tremendous importance of the psychological factor.

Bacillus Coli Infection of the Urinary Tract in Young Children.—J. Walter Carr (*Clinical Journal,* July 1, 1925) says that the one and only aim of treatment is to render the urine constantly alkaline and to keep it so for about a fortnight. It seems that the Bacillus coli cannot live in an alkaline urine, so that the object of treatment in Bacillus coli infection of the urinary tract is to convert the socalled alkaline tide into a continuous alkalinity. The salt commonly used for this purpose is citrate of potash. Large and frequent doses are essential if all the urine which is secreted is to be alkaline. For adults about a dram must be given at least every three hours, and for children even relatively larger quantities are necessary. During the first year of life a start may be made with five grains every two hours by day and every three hours by night, but this dose will probably have to be increased to ten and sometimes even to fifteen grains before the urine becomes constantly alkaline. After the first year still larger doses will probably be necessary. When given in these large amounts citrate of potash may cause some digestive disturbance, especially diarrhea, in which case bicarbonate of soda (or of potash) in the same doses may be tried instead. On the whole, the author says he has had the best results from giving the two salts together in equal quantities. In any event, whatever drug is used, it is essential that a sufficient quantity be taken to ensure that all the urine secreted is alkaline. A supply of red litmus paper should be given to the child's nurse or mother, and she should be instructed to test the urine each time it is passed. It should not be kept before testing, because, as already stated, it tends rapidly to decompose.

As soon as the urine has become constantly alkaline—it may take two or three days even when full doses of an alkaline salt are being given before this is attained—the temperature will almost certainly fall to normal and the general condition rapidly improve, but the alkalinity must be maintained, without exception, until the child has been free from fever for from seven to ten days, otherwise a relapse will almost certainly occur and the whole treatment have to start again *de novo.* Even after the temperature has been normal for a week or longer it is better gradually to diminish the quantity of the medicine than to discontinue it abruptly. It may also be wise to continue full doses of the alkali so long as pus cells are present in the urine, even if the temperature has been normal for more than a week.

Treatment of Constipation in Infancy.—J. Claxton Gittings (*Therapeutic Gazette,* October 15, 1925) says that while we are waiting for dietary changes to be effective, we must use certain laxatives. The simplest of these are normal saline enemas, gluten suppositories, mineral oil, and magnesia. Alternation is safer than the constant use of any one thing. A small bulb full (two ounces) of saline may be sufficient as an enema, repeated if necessary, or a larger amount (six to eight ounces) may be given through a soft rubber No. 20 French catheter with the baby lying on its left side and the buttocks elevated. The fact that large enemas may cause a tendency to syncope must not be forgotten. Gluten suppositories may be used in place of the bulb of saline solution. Mineral oil, with or without agaragar in one to two dram doses, is most useful, especially where the stool is of the dry "marble" type. Milk of magnesia in one or two dram doses usually is effective without causing pain.

For very constipated babies an occasional does of castor oil (one dram once or twice a month) with the mineral oil is permissible so as to insure a thorough evacuation. For older infants, six to eight months or over, ten to thirty drops of aromatic cascara may be used with mineral oil, in place of castor oil.

The use of even simple drugs and local stimuli always is to be deprecated. Nevertheless, when dietary corrections and exercise, fresh air and sunlight have failed to cure, therapeusis becomes essential.

When obstinate constipation persists beyond the eighth month in spite of mixed feeding, and without such causes as rickets, a gastrointestinal x ray is indicated to rule out a possible malformation.

Cerebral Degeneration in an Infant.—Norah H. Schuster (*British Journal of Children's Diseases,* July-Sept. 1925) tentatively presents the following case as a separate malady distinct from Wilson's disease and places her case from its resemblance in respect to ischemia, maldevelopment and degeneration with a group of two others referred to by D. Paterson and E. A. Carmichael in *Brain,* 1924, xlvii.

The family was composed of eight healthy children, ranging from twenty years, of which the one described below was the youngest. The second youngest, a Mongol, had died at the age of two and one half years. The confinement had been normal and the infant breastfed till four months old, and up to its final illness it had been healthy except that the mother reported restlessness at night, frequency of stools of normal appearance, and occasional twitching when teething. It had been wasting for six weeks. It was first seen at the age of five months, when it presented the symptoms which led to the diagnosis, was admitted to hospital, investigated and then discharged. At six months he was admitted to the Infants' Hospital, having got steadily worse, and he died three days later. At this time the child was in a wasted condition and weighed ten pounds three and one half ounces. He lay inert, with eyes open. He appeared to be blind, though the pupils reacted normally to light. He passed loose offensive stools, and took his food badly with occasional vomiting. There was asymmetry of the skull, the right side being higher than the left. The knee jerks were difficult to obtain. The Wassermann reaction was negative, and ophthalmological examination revealed nothing wrong with the fundus. The child slept little, but showed no fretfulness, and was altogether extremely limp until the last day, when he started "twitching." The temperature

varied between 100° and 104°, and pulse and respiration were irregular, perhaps because of the intestinal condition.

In examining the material yielded by the necropsy Dr. Schuster considered that there was not sufficient reason to class the case with Wilson's. First, the clinical picture was entirely different; this case presented no athetoid movements and no tonic spasms or rigidity, and the difference in age was, in effect, wide, because the disparity between the nature of the diseases of infancy and those of youth is considerable. Second, the pathological picture of Wilson's disease is not complete without cirrhosis of the liver, and this feature was entirely absent in this case. It would be more relevant to compare the pathology with that of encephalitis where the lesion is purely cerebral, but it is difficult to believe in such an infection occurring *in utero*, and there is no evidence of inflammation in the brain or membranes.

In comparison with Paterson's and Carmichael's cases, pathologically the essential lesion is the same, namely, a degeneration chiefly localized to the basal ganglia combined with excessive production of bloodvessels and neuroglia. The cortex presents a different picture, but it is apparently more a difference of degree than of kind. The absence of myelination and of pyramidal cells in the original cases shows a more complete degeneration, and is concordant with the severer changes in the putamen. The most important discrepancy is the total absence of round celled infiltration and meningeal involvement in the present case.

The case, Dr. Schuster believes, is most easily ascribed to a toxemia of unknown origin for which there is no evidence of bacterial infection.

The condition of the liver and kidney is obviously abnormal, but sheds no light on the original cause. The liver is in a state of disorder that may quite possibly be due to toxemia, but this microscopical picture is commonly associated with such extreme debility and diarrhea as was observed in this case. The kidneys show definite signs of a recent glomerulitis and tubular degeneration, but there are no collections of inflammatory cells and the interstitial tissue is unaltered. The histology of these two organs confirms the proposition of a toxemia, but does not help towards an explanation of the nature or sequence of events.

Goitre in Children.—A. S. Jackson (*Archives of Pediatrics,* June, 1925) states that iodine deficiency is generally accepted as the cause of simple or colloid goitre in children. Excessive physical and mental fatigue is also a factor in the etiology of simple goitre, as it adds an extra load to the thyroid gland. Goitre in children may be classified under three headings: colloid, adenomatous, and exophthalmic. The adenomatous type is subdivided into three types: nontoxic, toxic, and iodine hyperthyroidism. Colloid and adenomatous goitres are the result of a compensatory hypertrophy on the part of the thyroid gland, to supply the deficiency of thyroxin. Although colloid goitres apparently cause no symptoms, the disturbance in the thyroid gland may result in a general impairment of the vitality of the body. Adenomatous goitres rarely become toxic in children unless by the injudicious use of iodine. Exophthalmic goitre rarely occurs in children under ten years of age but is observed more frequently in persons between twenty and forty years of age. In nine cases of exophthalmic goitre in children observed by the author, all but one of which received treatment with iodine, the patients were successfully operated on. All children living in the goitre area should receive prophylactic treatment with iodine, which should be started at the age of ten. If small adenomas are present, treatment may be continued until the age of twenty-one, provided small doses are given with care.

Duodenal Contents of Infants in Health, and During and Following Diarrhea.—Wilburt C. Davidson (*American Journal of Diseases of Children,* June, 1925) presents data which suggest that in digestive disturbances in infants, especially in diarrhea and to a lesser extent in bacillary dysentery, the activity of the duodenal amylase and trypsin is decreased, and the hydrogen ion concentration of the duodenal contents and the numbers of colon bacilli in the duodenum are increased. While no definite conclusions can be drawn until more observations are collected, at present it would seem plausible to suppose that five factors may be responsible for the production of diarrhea in infants: 1, a primary cause which is at present undetermined but which may be different in individual cases, namely, external heat, fever, infections and overfeeding with an improper diet; 2, a reduction in the activity of the duodenal enzymes and secretions as a result of the primary insult; 3, an accumulation of undigested and unabsorbed food material in the duodenum as a consequence of the reduction in enzymic activity; 4, the invasion of this food material by organisms of the colon group from the cecum aud large intestine, and 5, the fermentation of this food material by these organisms and the formation of irritating end products which accelerate peristalsis and produce diarrhea.

Origin and Treatment of Congenital Stridor.—Karl Benjamin (*Monatsschrift für Kinderheilkunde,* June-July, 1925) states that the common inspiratory stridor of infancy (congenital stridor) can be temporarily relieved by drawing forward the lower jaw, by elevating the floor of the mouth, and by depressing the tip of the tongue. It also disappears on crying, when the expiratory position of the larynx during crying persists into the inspiratory crying pause. All of these procedures elevate the root of the tongue and straighten out the epiglottis. The noise of the stridor originates in the vibration of the free borders of the laryngeal rim, which is not stretched out in the infant as it is in the adult, but as a result of the high position of the larynx and of the relative large size of the tongue, is cramped loosely over the glottis and is therefore more easily put in motion by the current of air. An abnormal shortness of the lower jaw appears to increase the physiological predisposition of the infant to epiglottic stridor. This condition disappears spontaneously with the growth of the lower jaw and the depression of the darynx. The enlargement of the thymus so frequently found in congenital stridor is not the cause of the stenosis, but may be considered to be its result, as every impediment to respiration produces a venous hyperemia of the thoracic organs.

Significance and Treatment of Fever in Infants.—In a vigorous article, J. La Bruce Ward (*Archives of Pediatrics,* October, 1925) upholds the remedial purpose and effect of fever in infants, a stand, as he says, taken by the father of medicine five centuries B. C. As far as experiments with animals are concerned it has been shown that when the animals are kept at high temperature their defense against infection and intoxication is more effective, thus enabling them to survive doses of bacteria to which the controls quickly succumbed. The author continues that in his opinion babies suffering from fever need treatment often quite diverse in method. When it is realized that the temperature curve is determined not only by the nature and severity of the disease but also by the age and nervous makeup of the infant, the absurdity of attempting to alter it merely because we think it should not exceed a certain arbitrary limit, is obvious. To speculate upon the cause of and reason for the characteristic temperature curves peculiar to certain diseases is interesting. Science may yet prove that the widely fluctuating and intermittent fever, characteristic of certain malarial fever for the metabolic processes producing such fever, is more inimical to the growth of the plasmodium than would be the slightly fluctuating, high temperature common in lobar pneumonia. Dr. Ward believes that no drugs should ever be used unless there is a clear indication of their necessity and adds in respect to medical antipyretics that they should be used only when the physician has satisfied himself that the patient will be benefited by a lower temperature and that hydrotherapy under expert medical direction has failed to accomplish this.

Two Cases of Occlusion of Bile Ducts in Infants.—W. M. Feldman (*British Journal of Children's Diseases,* July-September, 1925) presents two cases of occlusion of bile ducts in infants. The first was in a male twin whose twin sister was normal. The jaundice first appeared at the age of eight weeks. The serum tested gave an indirect van den Bergh reaction which is supposed to be characteristic of the hemolytic rather than the obstructive type of jaundice. The conclusion drawn was, first, that obliteration of the duct was due to some postnatal cause, probably septic absorption through the umbilicus and, second, that the van den Bergh reaction cannot be considered to be an infallible differentiating diagnostic test between the obstructive and the haemolytic types of jaundice. The author believes that all other cases in which jaundice is not evident at or within a couple of days after birth is of postnatal origin.

The second case was in a male infant ten weeks old suffering from jaundice which showed all the characteristics

of the obstructive type. The symptoms set in twelve days after birth. There was no history of umbilical sepsis and no toxic symptoms. Its weight at birth was eight pounds. There were no other cases of infantile jaundice in the family and the other children were healthy. There was no history of syphilis. The infant appeared well nourished, although its weight at the time was only eight pounds two ounces; the skin and conjunctivæ were deep yellow, and the liver edge was three fingerbreadths below the costal margin. Biochemical tests gave the following results: First, fragility of red cells normal; second, Wassermann reaction negative; third, van den Bergh's test gave both the direct and the indirect reaction which is not inconsistent with the modern theory of jaundice. Upon operating, the gallbladder and all the bile ducts were found to be stenosed so that nothing useful could be accomplished. The infant recovered from the operation but died nine days later. The author says that in his opinion if surgical methods were adopted in such cases as soon as the jaundice manifests itself that they might be attended with success.

ENDOCRINOLOGY

The Problem of Senescence and the Doctrine of the Glands of Internal Secretion.—E. Gley, after recounting (*Revue Francaise d'Endocrinologie,* March-April, 1925) the work of Brown-Séquard, Steinach, Ancel and Bouin, Lichtenstern, Benjamin, Sand, Lespinasse, Voronoff, Thorek, and Parhon and Kahane, says these several experiences show that new testicular hormone applied to exhausted tissues causes a reawakening of their organic activity. Enfeebled genital function has been aroused by all these workers, or even restored when wholly absent, but there is no evidence that life has been prolonged. Are old age and death a necessity or a contingency? There are forms of life, vegetable, and protozoan, and even higher types, which appear never to become senile. They alone possess the astonishing property of preserving unaltered the faculty of growth. In creatures whose growth ceases decline is inevitable. It may be then that the problem of senility is nothing but a question of growth. But, besides loss of the faculty of growth, the being who grows old presents irreversible alterations in the colloidal state of the cells of different tissues. Thus the age of their secretion determines the age of the sex glands, instead of being determined by it. Whatever the procedure essaying to activate the testicles, restitution on the one hand can be no more than temporary, and on the other hand can alter nothing regarding these irreversible organic modifications, can only produce functional changes.

Organotherapy, Present Achievements and Future Prospects.—H. Lisser says (*Endocrinology,* January-February, 1925) that there are certainly two and possible three endocrine extracts which are standardized, strongly potent, uniformly reliable, and specific, and which, when properly administered under appropriate circumstances will yield consistent and convincing results. These are thyroid extract or thyroxin, as used in myxedema and hypothyroidism; insulin, as used in diabetes mellitus; and possibly pituitrin, respecting which the doubt hinges upon the pituitary origin of diabetes insipidus. Adrenalin, although standardized, potent, and even synthesized, "has not been consistently or convincingly effective in the relief of the only adrenal deficiency syndrome that we are sure of, namely, Addison's disease."

A second group includes those endocrine substances which have produced remarkable improvement in specific deficiency syndromes, where the favorable response to the gland administered seems incontrovertible, but where results are not wholly dependable or consistent. These comprise the pituitary extracts, and ovarian and testicular substance by transplantation.

In a third class stand other endocrine extracts where occasional benefit may have been obtained from their employment. In this group belong parathyroid, pineal, adrenal, thymus, prostate, mammary and placental extracts.

The author deprecates pluriglandular therapy. One of the best methods, he says, of judging the potency of an endocrine extract is to study the effects of overdosing. An excess of thyroid extract produces unmistakable signs of thyrotoxicosis. One dare not be careless in overdosing with insulin. Excessive amounts of adrenalin and pituitrin produce annoying symptoms. We may well ask what similar alarming or dangerous symptoms are produced by very large doses of whole pituitary, ovarian, testicular, parathyroid, pineal, adrenal cortex or thymus extract.

Corpus Luteum Extract as a Hemostatic Agent.—K. Prerovsky (*Bratislavské Lekárske Listy,* February, 1925) says that extract of the whole ovary has no effect on blood coagulation. Aqueous extract of corpus luteum, on the contrary, possesses a very pronounced styptic property when adiministered subcutaneously or intravenously. Orally it is without effect. The maximum hypercoagulability is reached from the third to the fifth day after instituting daily administration of two cubic centimetres of the extract. But the corpus luteum begins to take effect half an hour after the injection, and the hypercoagulability so induced lasts from ten to eighteen hours and only disappears completely on the sixth or eighth day. Repeated doses tend to diminish the styptic effect. On the whole the extract acts more energetically on coagulation of capillary blood than on that of venous blood.

The mechanism by which the corpus luteum acts is not that of a direct influence nor that of protein action or the ordinary effect of a cytozyme. Probably it takes place by the intervention of the liver, causing a profound alteration in the composition of the tissue fluids, especially as regards their cytozymoid content. To stabilize the blood of a subject in whom a massive injection of corpus luteum has been made a much larger dose of antithrombin is necessary than in controls.

Genital Organotherapy in Basedow's Disease.—This special form of organotherapy, advocated by Goglia (*Revue Française d'Endocrinologie,* March-April, 1925), is based on the functional antagonism between the thyroid and the genital glands. The therapeutic results are favorable when characteristic signs are present of ovarian insufficiency, and even when these are absent. There is no contraindication to this method of therapy.

The Parathyroid Glands and Their Iodine Content.—A. M. Hjort, O. M. Gruhzit, and A. G. Flieger (*Journal of Laboratory and Clinical Medicine,* September, 1925) analyzed specimens of desiccated parathyroid, pituitary, thymus, and ovary from the ox, calf and hog, and found the iodine content of the parathyroids to be no greater than that of the other glands. The iodine found in these glands probably represents the normal distribution of that substance throughout the body tissues. Parathyroid preparations made from the external bovine glands were not contaminated with thyroid tissue.

Shock Doses of Bacillus Coli Vaccine in Exophthalmic Goitre.—Arthur C. Wilson (*British Medical Journal,* March 7, 1925) reports his results with shock doses of Bacillus coli vaccine in eighteen cases of exophthalmic goitre. The dose was five hundred million bacilli. No case required more than six injections, which were given every seven days. Rest in bed was not found necessary, except in severe cases. Every patient had the classical symptoms and the benefit from the vaccines persisted long after the cessation of the injections. In nearly every instance the Bacillus coli was found in the urine. Every case resulted in a cure. The vaccine treatment of simple goitre proved to be less successful in the hands of the author.

Studies of the Thyroid Gland.—F. S. Hammett (*Psychiatrisch-Neurologische Wochenschrift,* June 13, 1925) made a systematic intensive study of the significance of the internal secretions in relation to age, examining carefully the organs and tissues removed from several hundred white rats in seven series, which had undergone deprivation of the thyroid and parathyroid glands at the conclusion of puberty and at six succeeding periods twenty-five days apart and were sacrificed five months later. Interesting conclusions are drawn from the completed examination of the seventy-five day and of the hundred day series. The younger the animals, the less influence has thyroidectomy in checking growth. Absence of glandular action has a more preceptible influence over growth in general in the case of female than of males. A very demonstrable effect on the rats operated on at one hundred days is a strong tendency to dehydration, demonstrating that the thyroid gland takes part, at any rate in the growing organism, in fluid exchange and must be taken into account in dealing with edema. Growth of the brain was found to be restricted more by removal of the thyroid than growth of the spinal cord. In males alone does pituitary enlargement take place as a result of thyroidectomy, while in females retardation of pituitary growth or absence of any change is observed. The thymus is exceedingly sensitive to thyroidectomy. Numerous observations were made to ascer-

tain the effect of lack of thyroid secretion on reproduction. It was established that conception takes place and young are brought forth when completely thyroidectomized females are mated with completely thyroidectomized males. No apparent impairment of the gonadal internal secretions could be detected. Still certain phases of reproduction, such as the formation, ripening, and expression of the sex elements, were unquestionably interfered with, as well as the events following fecundation. This is seen in the increased sterility, the age above normal of attaining puberty, the high birth mortality, the high mortality during and after weaning, the small number of young in a litter, and in the fact that the young rats do not thrive during the nursing period as with a normal mother.

Treatment of the Consequences of Arrested Menstruation by Irradiating the Pituitary and the Thyroid.—J. Borak (Vienna) remarks on ovarian hypofunction (*Münchener medizinische Wochenschrift,* June 27, 1924) as a cause of hypofunction of the pituitary and the thyroid. All the disturbances dependent on cessation of ovarian function may be very rapidly and very effectively ameliorated by irradiating the pituitary and thyroid glands, especially the former. Radiotherapy acts by inhibiting the endocrine cells.

Influence of the Autonomic Nervous System on the Function of the Thyroid Gland.—J. Hamilton Crawford and J. N. J. Hartley (*Journal of Experimental Medicine,* August, 1925) investigated the influence on the histology of the thyroid gland of section or stimulation, either singly or combined, of the various nerves which pass to the thyroid gland. The microscopic picture of the thyroid in normal animals was the same in the two lobes in the same animal, and therefore one lobe could be used for the experiment and one for the control. No histological difference was noted in the structure of the thyroid gland either from cutting off the nerve supply or from nerve stimulation.

Clinical Significance of the Congenital Absence of the Upper Lateral Incisor Teeth.—H. Wheelon (*Endocrinology,* January-February, 1925) presents four cases and gives a review of the literature. Heredity is a strong feature, there being altogether twenty-nine known instances among immediate relatives of these four patients where absence or serious deformity of lateral incisor teeth occurred. Lucas in 1888 published several cases of patients with such anomalies who had children with congenital deformities, in most cases harelip and cleft palate. More recently Kaplan has connected abnormality of upper lateral incisors with gonadal disturbances *teratologically ab ova,* and Timme with pluriglandular disturbances. The author canvasses at some length the evidence presented by his cases in support of each one of these three suppositions, and finds no conclusion justified at present.

THERAPY

New Method of Treating Varicose Veins with Injections of Fifty Per Cent Glucose Solutions.—F. Remenovsky and R. Kantor (*Wiener klinische Wochenschrift,* May 14, 1925) report very good results with intravenous injections of fifty per cent. glucose solution into the varicose veins. The following technic must be closely followed: The use of the thinnest needle possible to avoid escape of the fluid from the vein after the removal of the needle; puncture of the congested vein; after the release of the stasis, the massaging of the blood from the congested area toward the heart; compression of the vein for a distance of a few centimetres above the congested area with the index finger and prevention of the approach of the blood from below by compression and stretching of the skin below the site of puncture with the thumb; slow injection of the solution with the most careful avoidance of paravenous injection (pain and heal); withdrawal of the needle with continued compression above and at the site of the puncture for two to three minutes.

It was found that the sixty per cent. glucose solution was especially well suited to bring about occlusion of the vein by a vascular alteration and inflammatory closure. If properly followed the procedure is absolutely painless, and a rapid thrombosis is avoided. The inflammatory reaction sets in more rapidly than with the use of other solutions. The patient is not kept from work and is not otherwise inconvenienced. The usual dose is five c.c., but ten c.c. may be given, or less if the reaction is too marked. The general circulation of the limb is also markedly improved.

Rectal Digitalis Therapy.—S. G. Zondek (*Klinische Wochenscrift,* July 9, 19925) draws the following conclusions from his experiences with rectal digitalis therapy:

There need no longer be any doubt as to the efficacy of this form of digitalis therapy, as the drug is well absorbed from the rectum, and it is no less effective than when given by mouth. It is even distinctly more effective in static conditions in the portal vein circulation. The subcutaneous and intramuscular injections of digitalis can thus be eliminated. Whenever a rapid effect is desired, the intravenous use of digitalis, however, is the best. A combined intravenous and rectal use of digitalis may also be indicated, as in the early days of a course of digitalis, in which case strophanthin may be given intravenously and digitalis in suppositories. The rectal therapy should also be combined with diuretics. Irritation of the rectum from digitalis suppositories has been observed only exceptionally, when the symptoms were only of a transient nature.

Treatment of General Paralysis and Tabes by Tryparsamide.—W. S. Dawson (*Lancet,* May 23, 1925) states that the spirocheticidal action of tryparsamide is relatively feeble, but it has a marked tonic effect; it promotes recovery from toxic injury and induces the healing of syphilitic lesions without increasing the liability to a generalized spread of the spirochete. At the same time it has very little local or general irritant action upon the tissues, and cumulative effects are infrequent. Moreover, experiments indicate that it has a greater power of penetrating into the cerebrospinal fluid than other arsenical preparations. Its sole disadvantage is a tendency to cause amblyopia which is usually transitory, but may rarely be permanent.

In none of the author's series of twenty cases was there produced any remarkable result such as might not possibly have been obtained by the administration of other arsenic compounds. Several cases of paresis appear to have had their downward course arrested, while others have improved to a lesser extent. Whether tryparsamide is really more potent than other arsenicals is not proved in the author's series of cases, but the drug is certainly worth further trial. It is easy to administer and does not appear to be toxic in the doses used—eight weekly doses of two grams, dissolved in five to ten c.c. of distilled water intravenously or intramuscularly. The latter appears to be preferable as it is less quickly eliminated from the system. There was no general reaction except in one case in which a rigor occurred several hours after one injection

Rectal Injection of Ether in Whooping Cough.—As a result of his studies C. Elgood (*British Medical Journal,* May 23, 1925) found that drugs still hold their place in the treatment of whooping cough. Of these belladonna seems to be the most useful. Ether will check the disease completely in twenty-five per cent., fail completely in twenty-five per cent., and be followed by considerable improvement in fifty per cent., of the cases. Ether neither causes nor prevents complicating bronchitis; bronchitis already present is not a contraindication to its use. The method of administration seems to be of no importance provided the dose is large enough.

Treatment of Inflammations with Röntgen Rays.—H. Cramer and H. Kalkbrenner (*Klinische Wochenschrift,* May 21, 1925) report their experience with the use of röntgen rays in chronic and acute inflammation as follows:

1. An inflammatory process can undoubtedly be favorably influenced by röntgen rays with a superficial dose of twenty per cent. of the skin unit dose.
2. Acute inflammations can be influenced more readily than the chronic inflammations; occasionally the latter may even be refractory to this form of therapy.
3. The most favorable time for the induction of röntgenotherapy appears to be that of the beginning of the inflammation, and the time of the height of the inflammation seems to be less favorable.
4. The favorable effect is seen principally in the relief from pain, in the improvement of the general condition, and in the shorter duration of the inflammation (accelerated course of symptoms).
5. The surgical treatment of inflammations is considerably aided by a combination with a course of röntgen irradiation.
6. The authors explain the rationale of röntgenotherapy by the stimulation of a physiological protective apparatus to increased function—a complex process, the individual steps of which are not as yet certain.

MEDICAL JOURNAL AND RECORD

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Medicolegal Notes.

INTERNAL CURATIVE MEDICINE DEFINED

In a prosecution of an osteopath for practising medicine without a license in violation of Acts 39th Gen. Assem. c. 77, §15, which prohibits osteopathic physicians "to prescribe or give internal curative medicine," the state conceded that the defendant was licensed to practice osteopathy and the defendant did not claim that he was licensed to practice medicine. The evidence established that the defendant wrote prescriptions for his patients and that the prescriptions were filled by a pharmacist. It was also shown that the drugs were administered internally to some of his patients. Some of the ingredients were creosote, tincture of cinchona compound, strychnine, solium salicylate, simple syrup, lime water, and liquid parapectic. The question of fact to be determined was whether the defendant prescribed and administered internal curative medicine. The Iowa Supreme Court held, State v. Gibson, 201 N. W. 590, that the exclusion of expert testimony as to the technical meaning of the words "internal curative medicine" as used in the statute was not error, these words not imparting a technical meaning; and the trial court's definition of the words in its charge to the jury as "a medicine that is taken internally for the purpose of curing or tending to cure any disease" was held to be in harmony with the statute.

JAMAICA GINGER NOT INTOXICATING LIQUOR IN MISSISSIPPI

The Mississippi Supreme Court holds, Davison v. Town of Newton, 102 So. 161, that Jamaica ginger, or essence of ginger, put up in accordance with the United States Pharmacopœia, and having a recognized medical value and use, is not such an "intoxicating liquor" as is prohibited from being possessed by Miss. Laws, 1918, c. 189, although, if drunk to excess, it may produce intoxication, and although, if sold as a beverage, the seller may be convicted of selling intoxicating liquors. Section 2 of the act does not prohibit the possession of proprietary remedies or patent medicines intended for use as such, although they contain alcohol in sufficient quantities to produce intoxication if drunk to excess, if the percentage of alcohol be indicated thereon as required by law; it being lawful to sell such preparations as medicines, their possession cannot be unlawful per se. Consequently tincture of ginger or Jamaica ginger, prepared in accordance with the pharmacopœia, does not constitute intoxicating liquor per se. If a person sells such preparations as beverages, or with knowledge that they are to be used as beverages, it is held that he may be prosecuted under the Mississippi laws for selling them, but mere possession of them does not constitute an offense.

CHIROPRACTICS REQUIRE CERTIFICATE FROM STATE BOARD OF MEDICAL EXAMINERS IN LOUISIANA

The Louisiana Supreme Court holds, Louisiana State Board of Medical Examiners v. Cronk, 102 So. 415, that as under section 13 of the Medical Act, No. 56 of 1914, the mere direction or application of physical force for the treating, curing, or relieving any disease or ailment without having obtained a certificate from the state board, as required by section 15, is made an offense, the adjustment of vertebræ with the hands by a chiropractic without obtaining such a certificate is a violation of section 15, may be enjoined. Neither a state nor a municipal license entitles a licensee to pursue his business in violation of the criminal laws of the state, or in violation of the ordinances of a city. The state, in the legitimate exercise of its police power for the protection of the public health, is authorized to make provisions deemed necessary for that purpose, and to determine what is, or shall constitute, the practice of medicine. Such provisions cannot be construed as an illegal interference with the constitutional right of every citizen to earn a living.

CHIROPRACTOR'S TREATMENT OF RHEUMATISM REQUIRES CERTIFICATE FROM STATE BOARD IN ALABAMA

Alabama Code 1923, Sec. 5191, makes it unlawful for any person to treat or offer to treat, by any system of treatment whatever, diseases of human beings in the state without having obtained a certificate of qualification from the state board of medical examiners. The Alabama Supreme Court holds, Robinson v. State, 102 So. 693, that a chiropractor's treatment of rheumatism is such a treatment of disease requiring such a certificate; and in *quo warranto* proceedings to exclude the defendant from practising the profession of treating diseases of human beings without a license in violation of the statute, when the state proves acts done by him which he is prohibited by statute from doing unless he has authority by certificate or license, the defendant has then the burden of showing the authority by proper certificate or license, the proof of these facts being peculiarly within his knowledge.

EMPLOYERS OF INJURED WORKMAN HELD NOT LIABLE TO SUBSTITUTE EMPLOYED BY THEIR PHYSICIAN

The Alabama Supreme Court holds, Johnson v. Roberts, 103 So. 563, that generally, a physician employed to treat an injured employee has no authority to employ another to assist him at the employer's expense. Dr. Rosamond, a physician and surgeon who performed operations, was employed by a firm to take care of an injured workman and "to do everything necessary," and "not to leave a stone unturned in attempting to save his foot." Dr. Rosamond employed the plaintiff, also a surgeon and physician, to perform an operation on the foot and to treat it. The plaintiff presented to the defendant firm a bill for his services, which they refused to pay, and he sued the firm. The Alabama Supreme Court reversed a judgment for plaintiff for the reason that the defendants' instructions to Dr. Rosamond gave him no express or implied authority to employ the plaintiff to assist him, nor to turn the case over to plaintiff and let him perform the operation and services at the expense of the defendants.

"Dr. Rosamond," the court said, "in this employment to treat Taylor, was an independent contractor, without any control or suggestion by the defendants as to what he should do for Taylor, or how he should treat him. He was free to treat the case as he should choose, but he was not the agent of the defendants in so doing and he was not the agent of the defendants by this employment and contract.

"The plaintiff had no contract, express or implied, with defendants to perform the services for Taylor, and they did not request him to do so. He was employed by Dr. Rosamond, without authority, express or implied, from the defendants to render these services for Taylor, and the defendants are not liable for his compensation."

MEDICAL TESTIMONY TO IDENTIFY ACCUSED

Where the matter under inquiry in a criminal proceeding was the identification of the accused as to one who had committed a theft, the Louisiana Supreme Court held, State v. Butler, 103 So. 332, that the physical examination or facial observation of the accused by a doctor on the stand to determine whether accused's face was pox-marked was not improper or prejudicial to the accused, and a question as to whether the accused had pockmarks was not leading or suggestive of the answer.

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The Case Against Indiscriminate Surgery for Peptic Ulcer*

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New York

In the treatment of gastric and duodenal ulcers there is a certain rôle to be performed by surgery; but it is my object to call to your attention some of the drawbacks and limitations of surgery, and to advocate medical treatment for all ulcers unless these have a surgical complication. The more noteworthy surgical complications of ulcer are: perforations, acute or chronic; hemorrhages, if large and recurrent; and obstructions such as pyloric stenosis and hourglass constriction. In addition we have the cases that fail to heal under medical treatment, for if medical treatment fails what is left but surgery? Yet in these cases we must be careful not to buoy our patients with too great an expectancy of a permanent return to a symptomless stomach and normal digestion.

MEDICAL TREATMENT

A word about medical treatment. Last year I treated successfully, so far as we can judge at this time, three cases of ulcer which had been treated medically with failure by three internists of the highest repute in three of our great cities, two being professors of medicine and one an assistant professor of medicine. In each case the treatment had lasted not over four weeks and the patient was let go from the doctor's care with the impression that his ulcer was healed. In each case the injunctions about diet and the subsequent care of the stomach had been perfunctory and totally inadequate, and in one case the doctor had permitted "a cocktail now and again." This is not the medical treatment of ulcer, it is maltreatment. But it is just this kind of maltreatment by supposedly good medical men that has justified the surgeon in taking into his domain many cases that could with less risk be cured by adequate medical measures. To evaluate medical treatment by examples of this kind would be as absurd as to appraise surgical treatment on the work of the average small town surgeon, whereas our surgical statistics are issued by eminent abdominal surgeons whose numerous cases would indicate the great extent of their experience and their exceptional opportunities for the development of technical skill in their operations. When therefore we speak of a course of medical treatment, we should mean adequate treatment by someone competent to give it and extending for a period of not less than a year. Very soon if the case is really surgical it will prove itself so.

GASTROENTEROSTOMY

In a paper read before this academy in May, 1924, I expressed the opinion that gastroenterostomy as the treatment for peptic ulcer starts under a serious handicap since it has an operative mortality of three to six per cent. and in those who do not die from the operation it is followed by two to five per cent. of marginal or jejunal ulcers. Since then Berg and Lewisohn have raised these figures considerably, for not only has Berg had thirty per cent. of secondary ulcers following gastroenterostomy and Lewisohn thirty-three per cent., but they call attention to the fact that the operative mortality of gastroenterostomy must be enlarged to include the high percentage of deaths which follow the secondary operations that are necessitated by the untoward sequelæ of the primary operation.

In addition to these deaths and new ulcers developing as the result of operation gastroenterostomy must meet a number of other charges, namely, 1, failure to cure; 2, failure to prevent hemorrhage and perforation; 3, failure to present the development of a new ordinary peptic ulcer—strange, is it not, that the condition established operatively for the express purpose of curing an ulcer failed to prevent the development of a new ulcer; 4, resulting gastrocolic fistulæ; 5, intraabdominal hernias (such as are produced by the slipping of the small intestine through the opening in the transverse mesocolon or behind the anastomotic loop of the jejunum); 6, external hernias through the wound in the abdominal wall, and 7, symptom producing intraabdominal adhesions.

Furthermore, in a number of cases when the surgeon opens the abdomen with the intention of doing an operation for ulcer, he finds no ulcer; in which event he removes the appendix and sews the patient up again, or still worse, performs a gastroenterostomy when there is no indication for it. Under wrong diagnosis of ulcer who would not prefer a medical "cure"? These cases should be added to the charges against surgery for ulcer, but occasionally the charge is offset when the surgeon finds some other lesion such as a cholecystitis, which justifies his operation in that particular case.

*Presented at the New York Academy of Medicine before the Deutsche medizinische Gesellschaft, November 2, 1925.

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OTHER FORMS OF SURGERY

Besides gastroenterostomy there are other forms of surgery somewhat in vogue, and all have a higher operative mortality than gastroenterostomy. Berg's operative mortality in 150 cases of subtotal gastrectomy has been about nine per cent.

RISKS INCURRED IN MEDICAL TREATMENT

What do we risk by giving our patients medical treatment? We risk renewed or continued ulcer symptoms, extension of the ulcer with involvement of neighboring structures, hemorrhage, perforation and change to cancer.

Does surgery remove these menaces? Omitting consideration of the comparatively new and not as yet much practised subtotal gastrectomy, we shall discuss other forms of surgery. Does surgery remove these menaces?

1. *Renewed or continued ulcer symptoms.*—Of renewed or continued ulcer symptoms surgical literature furnishes a large number of records. These have to deal for the most part with three conditions, viz., failure of the original ulcer to heal, the development of a new ordinary peptic ulcer, and the development of an anastomotic or jejunal ulcer. There are many cases on record of the development of new ulcers similar to the original one and even perforation and hemorrhage while a gastroenterostomy stoma was in good working order; but more frequent are the marginal or gastrojejunal ulcers which are a direct sequence of the primary operation. In some of these secondary ulcers there is recurrence and a second or third operation is necessitated. Deaver remarked: "I have one patient upon whom I have operated three times for marginal ulcer and who now, I feel quite sure, has a fourth," and Lewisohn reports a case that had a fourth operation in six years from the same cause. These marginal and jejunal ulcers occur frequently, but published statistics have a wide range of difference, varying from the one to three per cent. of the Mayo Clinic, Horsley's four per cent., and Roeder's not over five per cent. to the thirty per cent. of Berg and the thirty-three per cent. of Lewisohn. In reporting the cases from Eiselberg's clinic, Denk stated that the number of these ulcers had increased from 12 in 1903 to 309 in 1920. According to Rankin and C. H. Mayo, ten per cent. of them go on to fistula formation with the colon, a very serious complication; Bolton and Trotter also mention ten per cent., Lion and Moreau twelve per cent., and Loewy reports 76 in 400 jejunal ulcers (nineteen per cent.). In sixty-three operations for such colon fistulas Loewy reports twenty-seven per cent. of deaths and 11.1 per cent. of recurrences. After a stomach operation the risk of a marginal ulcer is never absent, for though it usually occurs soon and may even occur while the patient is still in the hospital after the operation, Bland-Sutton reports the occurrence of one after seven years, I have had one after ten years, and Judd one as late as sixteen years after the operation.

Fortunately in most of the cases that pay the penalty of surgery with these secondary ulcers, which are frequently more productive of symptoms than the original ulcer, medical treatment is successful. But a number require a second or a third operation, and some even then require for cure long and persistent continuance of medical treatment, or are never cured.

2. *Extension of ulcer.*—The second risk is extension of the ulcer with involvement of neighboring structures. There is considerable evidence that surgery has with sufficient frequency failed to prevent this, but I shall take the time merely to quote Sir Berkeley Moynihan's statement that "In some of the reoperated cases the ulcer was still open and had usually perforated and become adherent to the liver."

3. *Hemorrhage.*—Those of us who have turned over a number of cases for surgery have been nonplussed to note a hemorrhage develop in some of them any time from a day or two to many weeks after the operation. Of gastroenterostomy cases Balfour of the Mayo Clinic reported hemorrhage in eight per cent. of those that had shown hemorrhage before the operation and in three per cent. of those that had had no previous hemorrhage. In Eggleston's series of forty-seven cases hemorrhage occurred in twelve per cent. of the patients some months or years after the operation, all having shown bleeding previous to the operation. Klein gathered reports of hemorrhage after operation as follows: Zweig in fourteen out of seventeen cases that had been operated upon because of the bleeding; von Petren in 7.4 per cent. of 203 gastroenterostomies; Rovsing in ten per cent.; Moynihan in a number, though the figures are not given. Kocher, Quénu and Eve each reported a fatal case.

4. *Perforation.*—From the literature Larrien gathered eighty-one cases of acute perforation following operation, and Douglas added twenty-nine. McKnight had two ulcer perforations at long intervals in the same patient though the gastroenterostomy stoma was functioning properly. Luckett tells me of a case in which seven months after gastroenterostomy for duodenal ulcer, he had to operate for a penetrating ulcer of the lesser curvature. The patient had been all the time on a plain bland diet and the gastroenterostomy stoma was working perfectly. Moynihan, Troell and von Haberer each report fatal cases. There are also fatal cases of perforated jejunal ulcers after gastroenterostomy (Lion, Barling).

5. *Change to cancer.*—In the duodenal ulcer the occurrence of cancerous change is so rare as to be negligible, therefore we shall confine our discussion to gastric cases. In these MacCarty of the Mayo Clinic reported his belief that cancer arises from ulcer in sixty-eight per cent. of the cases; and Wilson and McDowell of the same Clinic went so far as to say that "it is probable that gastric cancer rarely develops except at the site of a previous ulcer." On the other hand Kocher believes that cancer arises from gastric ulcer in only two per cent. of the cases, von Eiselberg in a possible four per cent. and Ewing, who made a thorough study of MacCarty's specimens, in three or four per cent. Wilensky and Thalheimer found cancer arising in only one of forty-eight specimens examined.

There are many statistics which show that it is comparatively uncommon to have an ulcer history in a cancer case. Nielsen in a study of 221 cases of positive ulcer observed from two and one half to nineteen years found none that became cancerous; while Friedenwald, in 1,000 cases of cancer of the stomach in which careful records had been kept,

found an ulcer history in 7.3 per cent. and some kind of preceding digestive symptoms in twenty-three per cent.

By means of a questionnaire to the members of the American Gastroenterological Association C. R. Jones made a summary of the clinical observations of these gastroenterologists. His findings might be stated briefly as follows: A very small percentage of gastric cancer cases have given a history of previous gastric ulcer, and a very small percentage of gastric ulcer cases have subsequently developed cancer. Indeed the majority of the members reporting think that there is very little relation between the two, many who have treated large numbers of ulcer cases being unable to report that cancer subsequently developed in any case, and the others a possible one to five per cent.

In stomach specimens received from the operating room with the diagnosis of simple chronic ulcer, M. J. Stewart found cancer in 11.5 per cent. (twelve out of ninety-eight cases), and Wilensky and Thalheimer found it in 18.7 per cent. The Mayo statistics are familiar. Ewing and many other pathologists believe that these cancerous ulcers of the stomach have practically always been cancer from the start and were never simple ulcers. Ewing suggests that these ulcers started as ordinary cancers and that the cancer tissue has for the most part digested off leaving an ulcer. Wilensky's case in which the ulcer showed no cancer whatever, but in which the adjoining lymph nodes were cancerous, supports this theory.

It would seem then that nearly all pathologists and practically all gastroenterologists hold the opinion that only a very small percentage of gastric cancers have their origin in simple ulcer, and that almost all ulcers that show cancerous development have been cancers from the beginning.

Balfour states that "during a seven year period at the Mayo Clinic cancer has been known to develop in thirty-three out of 799 cases operated upon for gastric ulcer. These known cases developed after every type of operation and no less frequently after partial gastrectomy than after gastroenterostomy with knife or cautery excision." Those in which the lesion was not removed and death occurred from cancer all conformed more or less to one type, namely, "large ulcer of posterior wall adherent to the pancreas too firmly and involving too much of the stomach to warrant risk of removal." Of these large ulcers, *the subsequent death rate following gastroenterostomy alone is twenty-five per cent.* Even after the ulcer was removed the percentage of ulcer patients dying of cancer after 296 cautery excisions with gastroenterostomy was 3.3 per cent., after 172 knife excisions with gastroenterostomy six per cent., and after 130 partial gastrectomies, three per cent. Later Balfour reports that in 1,280 operations for gastric ulcer in fifteen years 195 patients died following satisfactory recovery from the operation; and while only seventy-five of these were reported to have died of cancer, it is probable, in his opinion, that many of the others also died from the same cause.

Therefore, so far as cancer development is concerned, there is no especially preventive value in a simple gastroenterostomy, and statistics indicate that there is very little preventive value in any kind of surgery. If as indicated nearly all the cases that end with cancer are cancerous at the time of operation, though to the naked eye the lesions seem like simple ulcers, then any operation short of wide resection with removal of all lymph nodes, indeed quite as thorough and radical operation as is at present practised in cases of carcinoma of the breast, is essential. And this kind of operation is not done, though perhaps the operation of subtotal gastrectomy approaches it.

Such cases of course are not amenable to medical treatment. Yet there is scarcely a surgeon who has had a patient with cancer of the stomach alive ten years after the operation, and many have not had one alive after five years. And as Balfour has shown, even when the cancer is in its earliest stages so that not only is it not recognizable clinically but even fails to be recognized by the surgeon at the operation, many of the patients die later of cancer. Therefore, even if it were the custom to operate in all ulcer cases or supposed ulcer cases, and at the operation to remove the ulcer, which in a large percentage of the operative cases is not now done, it would still be probable that the chance of lessening the deaths from cancer in the possible five per cent. of cases which apparently develop from ulcer would be more than offset by the immediate or remote risks of such general surgery.

I do not mean to imply that I would not have a patient operated upon if I suspected the case to be cancer. On the contrary so far as any individual patient is concerned I should wish him or her to have what chance surgery offers. Surgery has helped many cancer cases for a time, particularly those with pyloric obstruction, and on rare occasions has restored the patient to health. But the claim advanced by surgeons that by the removal of all potential cancers surgery for all gastric ulcer cases would result in the saving of many lives is wholly fallacious, for such wholesale surgery would show a mortality that has never been reached by the deaths traceable to change of gastric ulcer to cancer.

Moreover, if the ulcer is healed, what greater reason is there to fear cancer development in later years if the healing has taken place under medical treatment than if it has occurred as the result of surgical measures? Therefore it is not a just claim that surgery gives a better chance than medical treatment of forestalling a future cancerous development.

There is one exception. The evidence would suggest that almost all ulcers which may give rise to cancer are the large ones of the posterior wall adherent to the pancreas, and for these we believe that radical surgery is the correct treatment; though it is just in these cases, which are difficult to handle, that the surgeon so often avoids radical treatment.

Thus the risks we run by giving our patients medical treatment seem at least in some cases to be present after surgery.

CAN MEDICAL TREATMENT CURE?

Eggleston reports that after the lapse of a period of at least three years, of 156 cases treated medically, seventy-two per cent. had had no return of symptoms, and of the twenty-eight per cent. showing recurrence the average duration of institutional treatment had been only three weeks. Einhorn reported ninety per cent. of cures in 315 cases. Lockwood's

patients, followed for over three years, gave fifty per cent. of cures.

Hewes in forty-nine hemorrhage cases without obstruction reported sixty-three per cent. of cures. Thirty-three of these patients followed the treatment for only one to two months and showed fifty-four per cent. of cures; while the other sixteen carried out the treatment faithfully with eighty per cent. of cures. Friedenwald in a comparison of different forms of medical treatment obtained sixty-six per cent. of cures with the Lenhartz method, seventy-two per cent. with the von Leube, and eighty-six per cent. with the Sippy method. Smithies has just published a report of seventy-seven per cent. of cures in 470 cases (128 gastric, thirty-six pyloroduodenal and 306 duodenal); but it is fair to say that these represented only sixty-one per cent. of his total ulcer cases, the remaining thirty-nine per cent. (302 cases) being considered surgical from the outset.

In a study of the specimens obtained by subtotal gastrectomy at Mt. Sinai Hospital, Crohn in April, 1925, reported that in thirty-four specimens of gastric ulcer none showed any predominant tendency toward healing, while in thirty-nine specimens of duodenal ulcer seven ulcers had healed or almost healed, in spite of the fact that most were cases in which a severe hemorrhage had occurred within a few weeks of the ulcer removal, and one patient had had repeated recurrences and pleaded for permanent relief by surgery. Later Crohn reported to the American Gastroenterological Association that two patients who came to the hospital because of hemorrhage from gastric ulcer and underwent medical treatment for only three weeks, were then operated upon by subtotal gastrectomy and the ulcers found entirely healed.

Ulcers may even heal spontaneously or as the result of simple medical measures, for at autopsy healed ulcers are not uncommon. Moreover, Stewart of London reported that among the healed ulcers found at autopsy *healed chronic ulcers were as frequently met with as healed acute ulcers.*

DOES SURGICAL TREATMENT CURE?

Among the surgical cases must be included practically all of the more severe ones, so surgical statistics start with a handicap. I shall not go deeply into these surgical statistics, for they are very numerous and in many reports show an almost unbelievably high percentage of cures. Yet Deaver's statement regarding gastric ulcer that "surgery allows ninety per cent. of patients to recover" might be compared with an analysis of Deaver's statistics of patients who were traced which shows only fifty-eight per cent. free from gastric symptoms and fourteen per cent. of deaths due to the original gastric lesion which had not healed or to complications resulting from the operation. And I might quote Bettmann and White's 140 cases of operation for gastric ulcer, with an operative mortality of ten per cent. and 57.9 per cent. apparently well at the end of a year; Crile's report that five years later only seventeen were well out of seventy patients operated upon for gastric ulcer; Denechau's that about twenty per cent. showed good results four to twelve years after operation; and Deaver's "Of the cases in which the ulcer was not excised and in which only a posterior gastroenterostomy was done (only) eighteen per cent. of the patients reported freedom from symptoms one to five years later." Peck reports an operative mortality of 8.8 per cent. in 228 cases of gastroenterostomy for duodenal ulcer.

In 273 traced cases of gastroenterostomy for duodenal and gastric ulcer Smithies found only 20.9 per cent. clinically free from gastric complaints, whereas Eggleston reported fifty-six per cent. of failures from surgery in forty-seven cases (of gastric and duodenal ulcer) seen later at the Battle Creek Sanitarium.

On the other hand we might compare with these the more recent Mayo statistics. Balfour, 1924, in 1,000 cases with chronic duodenal ulcer operated upon more than ten years previously, found that eighty-eight per cent. reported relief from the symptoms for which the operation was performed. And he stated that "At the present time there is no conclusive evidence that any operation is more useful than gastroenterostomy in chronic duodenal ulcer, except in carefully selected cases."

Of 1,228 operations for gastric ulcer at the Mayo Clinic in ten years, gastroenterostomy alone was done in 20.3 per cent., gastroenterostomy with excision in forty-seven per cent. Of 6,665 cases of chronic duodenal ulcer in nineteen years gastroenterostomy had been performed in 5,755, or 86.35 per cent., and in only 2.18 per cent. was the ulcer excised in addition. In the other 13.65 per cent. (920 cases) other operations had been performed, such as excision alone, pyloroplasty and gastroenterostomy and partial gastrectomy. Of duodenal ulcers Balfour says "The necessity for removal of the ulcer is comparatively infrequent," the advantage of excision being a doubtful one.

Of secondary operations Eusterman had already reported from the same clinic only 144 after 4,793 posterior gastroenterostomies and eighty-four after 1,609 other types of operation.

MEDICAL FAILURES VERSUS SURGICAL FAILURES

In the case that is *not* obviously surgical, barring the effects of some delay under favorable conditions, proper medical treatment as a rule does no harm, and if it is unsuccessful soon proves the need of more radical measures. The two greatest dangers in delay are perforation and hemorrhage, and under proper medical treatment it is quite rare to have either. Therefore without any great risk medical treatment can be given a thorough trial in every ulcer case that is not obviously surgical. If it should prove a failure, at least it permits the patient to be turned over to the surgeon in better condition for surgery than before the medical treatment. Deaver is one of the strongest advocates of operation in all cases of ulcer, yet even he admits that "as a preparation for operation medical treatment has its usefulness."

But what about the numerous unfortunate patients in whom after all the distresses of an operation, the ulcer has failed to heal, or in whom have intervened some of the serious sequelæ due solely to the operation? What about the three to six or ten per cent. who have died? What about the cases with gastrocolic fistula? One such patient of mine died after five subsequent operations and many years of misery. What about the patients such as Deaver's that is

to have the fifth operation for a fourth marginal ulcer, or Lewisohn's that had four operations in six years? The internist can refer his failures to the surgeon in good condition for the operation, but the surgical failure may return to the internist in a deplorable condition, and sometimes, do what we will, he remains a chronic digestive invalid for the rest of his life.

ALL SURGEONS DO NOT FAVOR SURGERY IN ALL ULCER CASES

Crile says, "In both types of ulcer medical treatment should be tried and tried faithfully with controlled alkalinizing and frequent feeding. If this fails the case is surgical." Ochsner states: "I believe that in seventy or possibly ninety per cent. of all duodenal and gastric ulcers, if treated properly before severe obstruction has resulted, the patient can be put in a position in which his stomach and duodenum will be a better machine than you can ever make surgically." Bevan is of the opinion that almost all ulcers in their early history should be treated medically, surgery being needed ultimately in about ten per cent.; while W. J. Mayo says, "The large majority of cases of peptic ulcer seen early are amenable to medical treatment," and of chronic ulcers only those which are intractable require operation.

DUODENAL VERSUS GASTRIC ULCERS

Undoubtedly in seriousness and amenability to treatment and for the most part symptomatology these form two distinct classes. Other things being equal the gastric ulcer is the more serious lesion, it is more prone to cause loss of weight, it more often causes acute pain or vomiting, its remissions are less likely to be prolonged, it is more likely to force itself upon the patient's attention, and as with medical treatment, so with surgical it shows poorer end-results and a higher mortality. Therefore, while we can subscribe to Balfour's 1924 opinion that in duodenal ulcer cases "a higher percentage of satisfactory end results could be obtained if surgical treatment were postponed until indications for it became more definite," yet in the gastric cases we would caution against undue delay in securing surgery if good results are not promptly obtained by the medical procedure.

THE CRITERION FOR SURGERY

Granting that there still exist great differences of opinion as to the efficacy of any medical or surgical treatment for ulcer, and acknowledging that a large percentage of peptic ulcer cases are curable by surgical means and a fair number are not curable by medical means; nevertheless, in the light of all the risks and drawbacks of which we have spoken, it is my opinion that we are not justified in employing surgery in the great number of cases that promise to do as well by medical treatment.

In deciding for or against surgery I adopt the surgical criterion that I follow in other cases, namely: that an operation is justifiable only where there is a decided percentage of chances in favor of the probability that the patient will be better with the operation than he could possibly be with any other form of treatment; or in other words, when the risks from the operation are distinctly less than the risks of going without the operation.

This excludes operation in all ordinary cases of ulcer. On the other hand it leads me to favor operation at the onset in the perforation or penetration cases, in the cases with repeated copious hemorrhage, in the obstructive cases such as those with persistent pyloric stenosis, hourglass constriction or obstructive adhesions, and in those who because of difficult circumstances or difficult temperament cannot or will not faithfully carry out a prolonged medical scheme. In all other cases I favor medical treatment, but I do not hesitate to recommend surgery if there is persistence for a few weeks of pain, nausea or sour stomach, if after adequate medical treatment there is recurrence with violence following a symptom free period, or if after a considerable length of time the patient proves unable, while living a normally occupied life, to ingest comfortably ordinary foods sufficient to maintain health and nutrition. Thus I figure that probably between fifty and seventy per cent. of all peptic ulcers will yield to a course of proper and prolonged medical treatment, and that only the others should be considered surgical.

This then is a brief presentation of the case against indiscriminate surgery for peptic ulcer.

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The author's references will appear in his reprints.

Habitual or Recurrent Dislocation of the Shoulder*

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It is such a short time since reporting my experience in connection with these cases that my only excuse for writing on the subject so soon again is that you asked me to do so. It is impossible for me to know what interests you most, perhaps the operation through the axilla. For me the most urgent thing is to advance the idea of hyperabduction as the underlying causal force in the overwhelming majority of cases. It was responsible for the doing of the axillary operation which no one had done before. The only surgeon before me to suggest this mechanism of hyperabduction, so far as I know, was the late G. G. Davis, afterwards professor of orthopedic surgery at the University of Pennsylvania, and I got it from him. He did not tell in his paper where he got it but I know, from the cadaver. I saw him produce his first cadaver dislocation by hyperabduction in 1899 and many of them afterwards, and I have produced many of them myself and dissected many in various ways. On the cadaver this mechan-

*Read at the Annual Meeting of the Alumni of the Hospital for Ruptured and Crippled, in New York, November 23, 1925.

ism will produce a typical subcoracoid dislocation, such as we see commonly in life, every time unless the humerus breaks at the surgical neck and probably no other mechanism will produce it. Probably most falls on the hand end in abduction at the shoulder and sometimes in hyperabduction. We came to believe firmly in this as the mechanism for dislocations of the shoulder and to teach it and I came to believe in it as the great cause of most fractures and dislocations in the shoulder region, a dislocation being merely a fracture of the skeleton at a joint with displacement of the fragments.

What has this to do with recurrent dislocations of the shoulder joint? In the winter of 1906 and 1907 I was asked by a friend if operation would not provide a radical cure for this condition. He had a friend who contemplated marriage, was athletic and very ambitious, and whose plans in life were much interfered with by a recurrent dislocation of the shoulder. The knowledge of the average physician at that time is illustrated by the statement of the patient later to the effect that he had consulted as many as forty doctors, some of them surgeons, and had been advised by all without exception to let well enough alone, and one of them impressed him greatly by the information that if operated on he might end up with a stiff shoulder and shrivelled arm.

At this time I was compelled to admit that I had not seen, read, or heard of such an operation, but I did not hesitate to say that on the basis of my cadaver experience I believed I could cure the condition by operation. For me then the only pathology was a torn axillary portion of the joint capsule and the cure was to unite the margins of the tear. The only problem was to expose the tear sufficiently to permit a suture to be passed. The patient had recently purchased a leather shoulder brace, the chief purpose of which was to limit abduction, and he wished to try it out. A year later he returned, saying that I was the only one who had expressed confidence in his ability to cure the condition by operation, that I had confessed my lack of experience but that if I was willing to take the chance of operating he was. I operated in January, 1908, nearly eighteen years ago, and he has never had another dislocation since, has had normal function since a few months after the operation, and has done much athletic and other violent work with that shoulder. In this case only did I find evidence of a capsule tear in the upper margin of the torn capsule being found. In every case I found the capsule intact apparently but often very thin, and my conclusion has been that the gap between the divided margins became bridged across by a new cicatricial portion as the gap between the divided ends of the tendo achillis after operation for a talipes equinus becomes filled in by cicatricial tendon later.

A search of the literature showed that numerous theories for the etiology and pathology existed and a few patients had been operated on, the greater number by capsulorrhaphy for the contraction of a relaxed capsule, some of them by excision of the humeral head, one by arthrodesis. Ricard of France, who reported two cases (1) in which he reefed the capsule, was generally credited with originating the idea of contracting a relaxed capsule, but I found that Gerster of New York (2) had accomplished the same purpose in 1883 by excising an oval piece of capsule and suturing the cut margins of the capsule and the muscles together in three tiers. But most of these operations were done by an incision between the deltoid and pectoralis major muscles which was enlarged in various ways and always requires transverse division of the subscapularis tendon to expose the capsule.

Its chief objection is that it exposes the capsule too far external to the involved area to permit the most effective work on it. Hyperabduction at the shoulder thrusts the humeral head out of the socket by a leverage mechanism into the axilla behind the large axillary vessels and nerves, the circumflex nerve with its accompanying vessels crossing the prominence of the dislocated head. After repeated dislocations over a long period the torn capsule margins gaping apart over the protruding head become bridged across by a new portion of cicatricial capsule making the capsule abnormally long at the site of the dislocated head. To prevent the dislocations this relaxed portion of capsule must be contracted to within the normal length and strengthened, for which operation is necessary.

The acceptance and general performance of this operation has been retarded because the relaxed portion of capsule to be exposed is under and posterior to the large axillary vessels and nerves so that the surgeon not familiar with the anatomy prefers to make the exposure between the deltoid and pectoralis major muscles. With fair familiarity with the anatomy the axillary operation is the simplest, safest and most effective one, divides no muscles, practically no bloodvessels, and requires only a skin and fascial incision five or six inches long. Infection practically never occurs and in the one case in which it did occur the result was perfect, both as to motion and recurrence of the dislocation. There is probably less risk of infection than in a clean appendix or an inguinal hernia. The small wound, slight damage to the tissues and perfectly dependent drainage almost guarantee against infection.

RESULTS

There are two classes of patients especially prone to develop recurrent dislocations of the shoulder, athletes and epileptics, athletes because they will not immobilize and epileptics because they usually do not have the affected arm immobilized at the side of the body long enough to permit firm cicatrization of the torn capsule. The athletes belong to a much larger class of nonepileptics and in estimating the results of operation it is important to divide the cases into epileptics and nonepileptics because we should not expect as good results in the former as in the latter. I have included among my cases three of so-called snapping shoulder which is a very disabling condition and very poorly understood and this in turn probably accounts for the fact that it receives so little attention. I am now very strongly of the opinion that it is nothing more than a recurring subluxation of the shoulder joint in which the humeral head cannot leave the socket far enough to lock in the dislocated position when the arm comes down to the side, but goes out only a short distance to snap back on further movement. But I am not at all inclined to be dogmatic on the subject and am anxious for further light on it.

SNAPPING SHOULDER DISLOCATIONS

Recently I reported fifty-seven shoulders operated on, three being of the snapping shoulder variety. These latter are perhaps the most interesting because the least known and in many respects most troublesome because the snapping is associated with pain, weakness and interference with motion, and occurs many times a day, whereas the complete variety of dislocation may recur only at intervals of months. In my three cases two patients recovered completely after a capsulorrhaphy and one, the first, was only improved. This was the most interesting case because it raised the problem as to its cause. An orthopedic surgeon brought it to me because of its obscurity. We both agreed that its cause was intra-articular and in the nature of a subluxation, but neither could determine just where the head was jumping out of the socket which was most important because the curative contraction of the capsule should be done on that side. We finally decided to do this in the upper anterior portion and this resulted in only a partial cure. In the following two cases a contraction of the anteroinferior portion of the capsule as in the ordinary complete recurrent dislocation resulted in a complete cure. Recently, five and one half years after the first operation, this first patient submitted at the Northeastern Hospital before the Clinical Congress of Surgeons, to the operation performed in the two later cases, left the hospital six days after operation and has had uncomplicated healing.

DISLOCATIONS IN EPILEPTICS

Of the remaining fifty-four shoulders with complete dislocations, eighteen were in epileptics and thirty-six in nonepileptics. Of the eighteen in epileptics a capsulorrhaphy was done first in seventeen. In one powerful patient with frequent violent convulsions the condition was bilateral and in the first shoulder a capsulorrhaphy was done three times without success and later a high excision of the head of the humerus without further dislocations in that shoulder. The condition developing later in the other shoulder, resort was had at once to the excision without a preliminary capsulorrhaphy, and no more dislocations occurred in that shoulder. Between seventy and eighty per cent. motion developed in both shoulders. In another bilateral case a capsulorrhaphy was followed by no more dislocations in one shoulder, but in the other shoulder about the anterior half of the socket had been worn away by the very frequently repeated dislocations (many on one day as in a snapping shoulder) and the capsulorrhaphy while reducing the frequency of the dislocations did not stop them.

A Hildebrand operation for the reshaping of the glenoid cavity done fifteen and one half years ago has not been followed by a single dislocation. In two other epileptics failure of capsulorrhaphy was followed by a high excision and no more dislocations in the last case after three years. In the remaining thirteen epileptic shoulders capsulorrhaphy was sufficient for a complete and permanent cure. The above bone operations will always cure and it is very likely that the necessity for them can be materially reduced by a more prolonged immobilization of the arm at the side after the capsulorrhaphy.

DISLOCATIONS IN NONEPILEPTICS

No other operation than capsulorrhaphy was done in the nonepileptics and of the thirty-six, three were not heard from. Of the remaining thirty-three, in twenty-two, or sixty-six and two thirds per cent., a complete cure was obtained, i. e., no dislocations followed operation in periods ranging from seventeen and one half years to six months. In six cases only one dislocation followed operation which in the first case was done fifteen and one half years ago. Two dislocations followed operation in two cases, the operation in one case having been done sixteen years ago and in the other five and one half years ago. I saw this latter patient only once after his operation which was done June 2, 1920, and in reporting his case in 1921 he was considered a success because up to that time he had not had a dislocation since the operation. But a short time after that he reported that a dislocation had occurred and as I did not see him or have any control over him I felt that he would probably become a failure. In my recent report I was able to say that he had very recently written that he had but the one dislocation four years ago and had worked as a coal miner and played baseball regularly throwing the ball with the affected arm without any difficulty and that he considered the operation a remarkable success. Still more recently he was sent by the Veterans' Bureau to me on account of a new dislocation in the shoulder operated on, which occurred last June about a month after I had reported him a success and about five months ago. He still shows limitation of abduction in this shoulder of about twenty degrees which means that it is probably stronger than before this last dislocation.

A dislocation following operation in a nonepileptic is an advantage not a disadvantage in that particular case. It merely indicates that the operation did not furnish enough cicatricial strength at the site of the original dislocation and a new dislocation if properly treated by immobilization of the arm at the side afterwards will add the new cicatricial tissue just where it is most needed and probably another dislocation will not occur. If it does, the same immobilization afterwards will again add to the strength. As already stated I have had six cases in which one dislocation after operation has been sufficient and two in which two dislocations were necessary. Such a result could not be obtained without the performance of the operation which restored the conditions in a recurrent dislocation just after the first dislocation following operation to those immediately following the reduction of a first dislocation of a normal shoulder joint, i. e., in both there is a newly torn capsule which can be repaired only by the development of new cicatricial tissue between its torn margins. Proper immobilization of the arm following this will almost surely be followed by a strong capsule.

MOTION AFTER OPERATION

There is an intimate relationship between the return of motion after operation and the strength of the joint. The more slowly the return of motion after a capsulorrhaphy the stronger the joint. In a nonepileptic or an epileptic with sufficient mentality to work for it one need have no concern about the return of normal motion. Immediately after the removal of the bandages these patients begin with, at

least, abduction of the arm to a right angle and afterward one will be more concerned with inhibiting than advancing the return of motion.

As already stated in five shoulders in epileptics bone operations became necessary to stop the dislocations, in four a high excision of the humeral head and in one a reshaping of the glenoid cup. The latter operation according to its originator, Hildebrand (3) was followed by normal motion in the joint.

In my one case the result was brilliant so far as stopping the dislocations is concerned. The patient did not recover normal motion but very likely would have done so if he had mentality enough to desire and work for it. The high excision gave very good but probably cannot give normal motion. These operations should never be done in nonepileptics and probably need be done only very rarely in epileptics.

CONCLUSIONS

1. Hyperabduction of the arm by leverage action tears the joint capsule and thrusts the humeral head into the axilla. Repeated many times this leads to lengthening of the capsule here and loss of capsule resistance to hyperabduction.

2. The cure is to restore the capsule resistance by contracting the lengthened axillary portion. The axillary operation is easy, safe, does no damage to muscles, vessels or nerves, while the humeral head and overlying capsule are here almost subcutaneous.

3. No surgeon is justified in doing this operation before making himself familiar with the anatomy of the route, particularly with the relationship of the circumflex nerve to it. For his trouble in gaining this familiarity, he will be able to give a good prognosis for the operation.

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Otitis Media Purulenta Acuta

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The object of this article is to give the general practitioner some simple suggestions in the diagnosis and treatment of acute purulent middle ear disease before it has reached the stage of an active mastoiditis. It is extremely important that he should be familiar with the symptoms and realize the danger from neglect of proper treatment, not only to the function of hearing, but also to life itself.

SYMPTOMS AND SIGNS

The patient early experiences a sense of fullness of the affected side, together with a feeling of warmth in the head. Pain is usually not present at this stage, save a few twinges now and then in the affected ear. The temperature, however, usually is slightly above normal and soon starts to climb. This sense of fulness of the affected side and rise of temperature, should in all instances prompt the physician to examine the ear drum.

The physical changes in the drum membrane vary with the progress of the disease. Shortly after the initial symptoms we will find that the membrana tensa throughout the greater part of its extent is of a normal color except that the handle of the malleus is slightly congested. Shrapnell's membrane is also slightly injected. This appearance of the drum membrane itself should excite the suspicion of a catarrhal or a suppurative process in the vault, which later will extend downwards and involve the atrium. A few hours or a day later, we will find the upper half or the whole membrana tensa injected. The injection of Shrapnell's membrane is, however, much more intense and the infiltration is so pronounced as to indicate a suppurative process behind the membrane, namely, the vault. As the condition progresses, the part including, and immediately adjacent to, Shrapnell's membrane becomes markedly bulging, obliterating the drum landmarks. This clearly indicates the presence of pus in the tympanic vault. The entire drum membrane becomes an angry red and bulging, and the pain becomes so intense as to cause loss of sleep at night. In a few instances, pain is of a minor character. The temperature rises gradually, and may reach 103° to 105° even in adults. The patient looks ill and feels the same way. Perforation may occur with some relief of symptoms. As a rule, this perforation is too small to allow the escape of the suppurative products, and so the general signs and symptoms continue to progress. The posterior superior canal wall, i. e., that part immediately adjoining the drum membrane, becomes infiltrated and swollen, so that no line of demarcation is discernible between canal wall and membrane. This condition is commonly known as a "sagging of the posterosuperior canal wall," and it clearly indicates a severe suppurative process within the vault and a frequent coexisting inflammation of the mastoid cells. This condition should be clearly understood, for a study of the anatomy of the tympanic vault will readily show that pus collecting in the tympanic vault must find its way into the atrium. The atrium, therefore, is usually to some extent involved in a suppurative inflammation of the vault, and tenderness on pressure over the atrium is rarely absent in a very acute stage of suppurative purulent otitis media.

TREATMENT

General treatment.—The patient should be placed under the most favorable conditions for combating the local infection, namely, rest, regulation of diet and catharsis.

Absolute rest in bed is essential. This secures freedom from fatigue and excitement of daily routine. It protects the patient from sudden changes in per-

ipheral body temperature, which is so essential to aural disease where slight aggravation of a nasopharyngitis may cause rapid extension of the tympanic lesion. It should be remembered that the aural condition is always secondary to a nasopharyngeal inflammation.

During an acute stage of any suppurative lesion, the digestive function is easily disturbed. Keeping this in mind, the patient should be placed on a strictly liquid diet during the first twenty-four to forty-eight hours. As soon as the patient demands a more generous diet it should be changed to a light, easily digested solid diet. Avoid the use of red meats. Avoid a starvation diet in a patient with aural disease as it seems exceedingly senseless to deplete his strength and resistance powers by a prolonged starvation diet.

Regardless of the presence or absence of constipation or digestive disorder, some efficient laxative should be administered at the onset. The cleansing of the alimentary tract not only prevents digestive disturbances but also in some way exerts a favorable influence upon the tympanic lesion itself. Calomel in doses of one to three grains, according to the age of the patient, and followed in six to eight hours by a solution of magnesium sulphate, gives the best results. During the latter stages, teaspoon doses of rhubarb and soda mixture at regular intervals are very beneficial.

Local treatment.—The general practitioner should be able to manage the nonoperative treatment, i.e., the management of a case of acute middle ear inflammation without incision of the drum membrane. Incision is indicated only in a small number of cases as they are first seen by the otologist. When incision is necessary there should be no hesitation, and a specialist should be called to do the paracentesis.

When inspection of the drum head shows the lesion to be in an incipient stage, the abortive treatment should be tried. The patient is ordered to bed, and calomel, followed in six to eight hours by a solution of magnesium sulphate, is administered. Control of pain at this stage may not be necessary, but in hypersensitive patients the following prescription is of value, and in itself may favorably influence the lesion.

Codeine Ext. Belladonna	aa	gr i
Camphomonobrom Phenacetin	aa	gr v

M. Divide in chartulas No. x
Sig. One every four hours.

Avoid using opium for the relief of pain in acute otitis media as it may mask an important guide as to the progress of the lesion. In fact, it should never be prescribed. The application of dry heat is our chief reliance. This often does not wholly annul severe pain, but it often reduces very materially its intensity. The ordinary hot water bag should be filled half with water and then wrapped in one or more layers of flannel and the patient instructed to lie with the diseased ear in contact with it. Poultices over the ear are of no avail. Blistering and counterirritation over the mastoid should not be used, for their effect may subsequently mask mastoid signs. The use of hot or warm irrigations, which is a common practice, should not be employed, as they serve no purpose and in fact tend to aggravate the local condition. The instillation of phenol in glycerine five to ten per cent. at regular intervals also helps to allay pain and reduce the inflammation.

If at the end of twenty-four to forty-eight hours, these measures have seemed to control the symptoms, the abortive treatment should be continued. If the physical signs and symptoms continue to progress, the general practitioner should call upon the otologist, for the lesion has advanced to the stage of pus formation and retention and is now clearly a surgical condition. The local treatment in such cases is based upon two factors, as follows: 1, Providing free drainage from the tympanum by means of an incision of the drum membrane; and 2, keeping the external auditory canal as perfectly dry and free from pus as possible.

When inspection of the ear drum shows the membrana tensa to be bulging, there should be no delay in making a free incision through the posterior segment from the lower attachment to the middle of the posterior fold above, and if necessary through the fold. It is decidedly a wrong procedure to allow a bulging membrane to perforate of its own accord. A clean cut incision in the drum membrane immediately relieves the pressure, establishes drainage and the subsequent healing of the wound takes place with but little damage and no scar tissue. Nature's perforation is usually a small jagged hole, the borders of which are necrosed, and as healing takes place it is prone to result in scars, and considerable deposits of new connective tissue in the ear drum. Immediately following incision of the drum head, there is always a free escape of blood and pus into the external auditory canal. The patient experiences a marked sense of relief. Care must be exercised at this point to remove the clot of blood in the depths of the canal for if this is not done it partially or wholly defeats the purpose of the operation. Fifteen minutes after myringotomy the operator should remove this postoperative clot himself and not leave that duty to the nurse or patient. A sterile cotton applicator readily dislodges this clot.

It has been the common practice of physicians to employ routine irrigations of boric acid or sodium bicarbonate and the like in acute and chronic middle ear disease. This destructive practice should be discouraged. Otologists of reputation are gradually abandoning it. As Kerrison states in his textbook on *Diseases of the Ear:*

"I believe that every practical aurist will agree with me that the value of routine irrigations in acute middle ear disease depends much less upon the frequency than upon the thoroughness of the irrigations. The object in view is simply the complete removal of pus from the meatus. No matter how carefully the nurse may perform her duties, it will be found that the fountain syringe will in certain cases leave a residue of thickened pus at the bottom of the canal. Finally, there are certain cases in which one is forced to conclude that frequent irrigations tend to retard tympanic resolution. Such conclusion being reached, the irrigations should be discontinued or modified by combination with other measures."

It is clearly understood that although the object of irrigation is to clear the meatus of purulent dis-

charge, which empties into it from the tympanum, still in most cases the auditory canal frequently contains pus even after irrigation. This same purpose can be accomplished with far greater accuracy by a much simpler, saner and easier method than irrigation, and without the possibility of driving infection higher up into the tympanic vault and perhaps into the antrum. Patients get along better by not irrigating the ears.

The cleansing of the auditory canal can be accomplished by frequent swabbing with pledgets of sterile absorbent cotton wound about applicators or toothpicks at regular intervals, depending upon the rapidity and amount of secretion. As the secretion grows less the swabbing is done at longer intervals.

Besides treating the ear, attention should also be given to the existing nasopharyngeal condition to which the aural condition is secondary. A solution of argyrol ten per cent. should be instilled in each nostril at regular intervals and immediately followed by a one per cent camphor menthol in liquid albolene solution. A Dowling argyrol tampon should be inserted once or twice daily. The drum head should be frequently inspected to ascertain its patency, and partial or complete closure should warrant reincision. Very frequently, indeed, this procedure saves the patient the necessity of a mastoidectomy.

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Some Views on the Problem of Anaphylaxis

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When we wish to investigate the functions of certain parts in such an extraordinary complex mechanism as the human body, we get a much better perspective by going back to the primitive organisms and watching the gradual unfolding of the tale through the higher forms of life, as by doing so we find in the lower organisms, one group of cells fulfilling the function of what later on has developed into a highly complex mechanism.

For the coordination of this vast machine it is necessary that every part of the body should know exactly what is taking place elsewhere and to be ready at any moment to assist for the general welfare of the whole. A certain amount of this information is responded to by conveying messages to our conscious nervous mechanism and voluntary response is given, but by far the larger part is outside of volition entirely, and is handled by our selfregulating mechanisms. It is this selfregulating mechanism with which I wish to deal.

Of a necessity such a mechanism must consist of two elements, one to increase the function of individual parts and the other to diminish function, as we know of no other powers possessed by cells of any of our organs. By this means a state of balance is maintained.

Arising from such a conception, the only things we have to do are to supply ourselves with food and warmth and certain other ingredients which are usually to be found in the food we eat. The rest of the management is taken out of our hands and conducted automatically. When we as intelligent beings really grasp this point it makes us marvel that so little is left to us as regards the welfare of our bodies. We are even prevented by pains and penalties from the possibility of neglecting to supply ourselves with food or exposing ourselves to the extremes of temperature.

How vast these automatic mechanisms are can well be left to our imagination, as the more we ponder over them the more numerous they seem to become. These function alike in health and sickness, but it is in sickness that we are now concerned with them.

In the makeup of our bodies Nature has been lavish in providing us with excess material to allow for wear and tear and as dysfunction of any part of the body, which we mean when we talk about sickness or ill health, can only be due to hyper or hypofunction of certain body tissues, we cannot expect to find dysfunction until the particular tissue involved has been reduced to the minimum it can carry on with satisfactorily.

Our recognition of this stage may be at a time at which dysfunction only shows itself when the particular tissue involved is called upon to do extra work or it may not be recognized until dysfunction shows itself under normal working conditions, under either of these circumstances gross damage has already been done. If we were dependent on the limited number of cells we were originally provided with, under these circumstance we should be in sore straits, but owing to the fact that many cells are capable of multiplication or have certain powers of regeneration when somewhat damaged, we continue to live. There is yet another important factor in the reestablishment of function. In the presence of bacterial infection, there is around the invading bacteria an area, which, owing to the invasion of leucocytes, tissue cells, etc., is temporarily put out of action, and which on the dispersion of these cells quickly resumes function. It is this process which gives us our most brilliant results in treatment. For instance, kidneys invaded by organisms from infected tonsils and showing a heavy cloud of albumin, often resume normal functioning in two or three weeks after tonsillectomy.

Of the few factors responsible for tissue dysfunction in the body, by far the largest is that brought about by bacterial invasion; when this takes place and long before we are aware of it notification is sent by certain means to those parts whose duty it is to attend to such matters. These messages may be conscious but in the majority of cases in chronic disease they are not so.

Impulses may be communicated from cell to cell, but if it is necessary to convey messages to a remote part of the body one of two methods is adopted.

They can be sent along certain tissues which have become specialized for that purpose or they can be notified by secretions discharged into the blood stream. Of a necessity such secretions are the result of cell activity. There is no other way that we are at present aware of.

Owing to its being necessary for many organs to be able to diminish their function as well as increase it, a double nerve supply will be necessary. One nerve alone may be able to increase function which on ceasing to supply stimuli will allow function to return to normal level. This may suffice for certain organs or tissues, but for many two are necessary.

Every action and reaction within the body, except voluntary movement, is dependent upon the integrity and smooth working of these nerve paths and tissues which secrete hormones.

If we take some primitive organism we find that certain cells are employed for motion, some for acquiring of food, some for digestion, some for getting rid of waste products, some propagation and some for protection. These primal tissues although becoming very complicated in higher forms of life always retain their primitive functions however complex they may be. For instance, the defense mechanism of some low organisms may consist of barbs on springs curled up within the cell which are released on touching a trigger. From such a type arose the wonderful mechanism which has to deal with the hundred and one dangers which assail mankind, whether it be man, beast, bacteria or any other menace. The involuntary nervous system with its antagonizing relationship is divided into sympathetic and parasympathetic groups. The tissues from which the hormones are derived are likewise divided into two groups, one siding with or supplementing the sympathetic, the other the parasympathetic. With the sympathetic go the thyroid, the adrenals, pituitary and gonads, with the parasympathetic go the parathyroids, thymus, pancreas, spleen, liver, and possibly others.

We have the sympathetic and its auxiliaries taking control of all matters pertaining to defense and self-preservation against factors potential for harm. It likewise controls the factors by which man is able to procure his food and also presides over the reproduction of species.

The parasympathetic and its auxiliaries preside over the assimilation of food when once procured; they also control the elimination of waste or harmful products. This is very obviously illustrated in the intestinal tract. It is then clear without going too deeply into the matter that all automatic selfregulating mechanisms are under the sway of these two great systems.

When either of these systems is working normally nothing is felt, there is no disturbance within the body, but when called upon for excessive action certain definite symptoms are produced, which will occupy our attention. We as medical men are very dependent upon symptoms to assist us in our diagnosis of disease and unless we have a clear conception of these symptoms we are not going to be helped by them very much.

Owing to the fact that all messages in the body, except voluntary ones, are carried by one or other of these systems, it therefore follows that all symptoms except such as are the result of direct damage to tissues are the result of the functioning of one or the other of these groups. There is no other possible source. If we grasp this thoroughly it will be of inestimable help to us in diagnosis and treatment also. We thoroughly understand that if we have destruction of the islands of Langerhans or our kidney tissue destroyed or put out of action temporarily we shall have signs of the resulting dysfunction. These symptoms are more or less clear, but there are many the origin of which are not so clear, and it is the purpose of this paper to try and lay bare some of these and at least point the way for further investigation. As originally pointed out, the biggest factor we have to deal with in dysfunction of tissues is bacterial invasion. Where there is this invasion the sympathetic and its auxiliaries are brought into full action. These symptoms are so marked that he who runs may read, and can usually be recognized as soon as the patient walks into the room. They are common to at least fifty per cent. of patients attending my and anybody else's outpatient department. They call aloud for the relief of infection. They are known to all, but all do not know their significance. They are shown at their best in an extreme case of exophthalmic goitre. Every single symptom is some exaggeration of the functioning of this group and not, as many believe, signs of hyperthyroidism; in fact there are more signs of hypersympathetic activity than overaction of the thyroid. It is impossible for one part of this system to function without bringing in the others. If you remove the superior cervical ganglia very similar results are obtained as removing a large part of the thyroid. This is a good answer to those who say that all the symptoms subside in exophthalmic goitre when thyroidectomy is thoroughly performed and therefore the thyroid is the cause of the disease. These symptoms in mild cases may be nothing more than slight nervousness, a little increase of the pulse rate and a heart that is easily accelerated. They are often accompanied by a tremor, a feeling of lassitude, an inability to sustained exertion, and often a visible thyroid.

I wish here to deny the existence of the socalled physiological enlargement of the thyroid. It is the surest sign of infection there is. Nervousness likewise is also frequently a sign of infection. Not everybody shows signs of nervousness when they come to see a doctor, but a great number of infected persons do. Besides the sympathetic nervous system being in hyperactivity, bacterial invasion will be responsible for numerous impulses passing to the central nervous system which will likewise accentuate nervous activity, an accentuated response to all stimuli being the dominating element throughout.

All these symptoms are well known and have been admirably portrayed by Langdon Brown, but all do not know of their relationship with the milder and chronic infections.

When we find these two big systems unbalanced, as we do when thyrotoxic or anaphylactic phenomena are in evidence, how are we to read it. Are some people constitutionally so disposed to one or the other by inheritance or has prolonged exhaustion of one or other of the systems been the cause of the lack of balance? We do know that people are easily divided into three classes, the highly strung, the phlegmatic and the normally balanced individuals. Being born

of highly strung parents undoubtedly predisposes to the condition in the children, and in just the same way we find whole families with symptoms of pituitary dystrophy with a tendency to fat and a lethargic temperament. On the other side let us consider the child who starts early in life with infected tonsils as undoubtedly the mother infects them at a very early age. This child will have its defense mechanism constantly employed. The result of this will be a nervous system, with the sympathetic dominant. Night terrors will often be the initial trouble; this means fear, and once fear enters a child's life the possibility of a stable nervous system being established is very improbable. It is quite unnecessary to depict the highly strung child who is so well known to all. Later on if this hyperactivity of the sympathetic system is unchecked neuroses, hysteria, eroticism and neurasthenia are likely to follow.

On turning to the other group, things are not so clear, as less thought seems to have been expended in this direction.

If we depute the assimilation of foodstuffs to the parasympathetic group we may without hesitation include the elimination of waste and harmful products also, and I do not think that this can be denied, the elimination of all harmful and waste products. This covers a big field and involves a great responsibility upon this group, yet I see no way of its avoiding the obligation. In the primitive organisms the few cells which undertook elimination have in man developed into this vast system with all its ramifications. If man ingests some harmful product his parasympathetic system causes him to vomit. If he has within his body certain poisonous substances certain kinds of symptoms are produced; these symptoms are more or less constant irrespective of the substance producing them. They are not the result of tissue damage so must of a necessity, as previously explained, belong to the parasympathetic system in action.

We are still very much in the dark concerning these matters, but if I can tack anaphylaxis and parasympathetic phenomena together, it is only a matter of time for the rest slowly to evolve itself.

Vomiting and diarrhea then are the first and most primitive methods of elimination of harmful products, and are purely vagal stimuli; this is best illustrated by what is commonly known as seasickness, where there are streams of vagal stimuli passing from the semicircular canals. Tobacco poisoning causes vomiting, not because there is anything in the stomach of a poisonous nature to eject, but purely by excessive vagal stimuli. Asthma perhaps is one of the best recognized anaphylactic phenomena we know of. It is chiefly characterized by spasm of the bronchial muscles, the result of vagal stimuli. The accompanying engorgement is perhaps difficult to account for as neither vagal or sympathetic stimulation cause any alteration of the blood flow through the bloodvessels of the lungs. Urticaria and localized swellings as angioneurotic edema are also well recognized by many as anaphylactic phenomena and are frequently associated with asthma. A man presented himself at my outpatient department with angioneurotic edema of the face which had been moving to different parts of his face during the last week; he was also an asthmatic. Others have recognized this connection between the two. If one could link up localized edemas with the parasympathetic system my views in this matter would require no further evidence.

There is just one thought which may possibly throw some light on it. We are all aware of the condition known as localized sensitization, which after all is a provision for the destruction of bacteria and elimination of their foreign proteins. Now the local reaction to invasion of bacteria to sensitized tissues and urticaria following fish poisoning are practically identical. If one is undoubtedly parasympathetic, in view of elimination belonging to that group, so most probably must be the other.

With the urticaria following the parenteral introduction of a foreign protein the tissues are in a state of sensitization generally, with the introduction of bacteria to sensitized tissues the reaction is the same but local. In the latter we recognize the process as a useful one in the elimination and destruction of the bacteria and its toxins. Can we exclude the same mechanism as functioning in other forms of parenteral introduction of foreign proteins which are not localized but general?

The exact mechanism which causes the endothelium of the capillaries to allow the egress of fluids is not clear nor whether the stimulus comes from nervous or hormone influences. That it may be the local reaction to foreign proteins circulating in the blood is suggested by generalized urticaria following the local reaction of a serum injection. It may even be reasonable to conceive of its advent in a general parasympathetic reaction irrespective of foreign proteins.

Likewise it seems unnecessary for vomiting to be produced because fluid is moving about in the semicircular canals. What really happens is that stimuli are sent which produce marked reaction to the parasympathetic group whose primitive action is to produce vomiting; in other words all the resources are brought into action together like they are in the sympathetic reaction during bacterial invasion. With this in view we can then understand why urticaria should arise in other cases than those in which bacteria are invading sensitized tissues. It is simply one of the various phenomena of parasympathetic activity which may show itself during general reaction, and as such does not only occur in the presence of bacteria. Such a view seems reasonable.

The vomiting of pregnancy is probably on a par to that of seasickness. Defecation and parturition are parasympathetic acts. The uterine contractions of early pregnancy being more pronounced than formerly will stimulate the vagus excessively and the primitive instinct will be brought into play. There is also the possibility of an anaphylactic response from absorption of an unaccustomed protein in the desidua.

As either of these two great groups of symptoms is due to excessive action of one or the other group, that is, they are temporarily unbalanced, the obvious thing to do would be to balance them again if possible. In the case of hypersympathetic-parasympathetic activity stimulation of the antagonizing system should do away with the symptoms. Such is the case. This can easily be done by administrating the corresponding gland products, such as thyroid, suprarenal or pituitary extracts. The same end results can be obtained by depressing the parasympathetic system by drugs which have poisoning effect

upon it such as atropine. In our treatment of asthma we employ both these methods; we use belladonna and we also use iodides, which is only supplementing thyroid activity in the latter and paralyzing the vagus in the former.

Adrenalin quickly relieves asthma, but, owing to the liability of atheroma developing from its prolonged use, one does not like to continue it too long. A short time ago a patient came to me with asthma in a very severe form. He said that he reacted very badly to iodides, his eyes becoming much inflamed and that he could not take belladonna, and knowing that strychnine owes its action largely to stimulation of the adrenals, I put him on it. The next time he came to see me he was greatly improved. I then used thyroid extract as a better stimulus to the sympathetic group with still better results, but owing to a persistent antral infection I have been unable to rid him of his asthma entirely. Adrenalin relieves urticarial swellings rapidly. This alone should place urticaria within the parasympathetic group.

It has been known for some time that the prior administration of adrenalin prevents the occurrence of anaphylactic shock and relieves it when present. It is not at all uncommon to find a whole family with anaphylactic tendencies, some being liable to hay fever, others sensitive to some food protein; they will also often show the stigmata of the parasympathetic characteristics. I have had several asthmatics on thyroid extract for some time, and only in one who had an infected antrum which will require operation have I failed to bring about complete relief. It is well recognized that there are various foreign proteins responsible for asthma, but after a good many years of clinical experience I have rarely been able to find one which did not show marked nasal infection. An infected nasal mucosa means an irritable one which reacts to dust and almost any pollen, even a cold wind causing an acute outpouring of clear serum. I bring this forward as I feel we are inclined to regard these things too much as specific reactions when perhaps they are more generalized ones. I know a child who cannot ride her pony without her eyes and nose running profusely. I told her mother to give her two grains of thyroid extract daily; this did not cure her but considerably reduced the reaction. If we can establish the fact that all symptoms are either the result of impairment or damage to certain body cells or else due to one or other of these systems in unbalanced action a good deal of what was before obscure will become clear.

Epilepsy, on this basis, offers some chance for solution. It is a recognized thing that in some epileptics there are organic lesions and in others nil. With organic lesions, which are invariably the result of bacterial invasion, we can well understand fits resulting, but where there are no lesions it is not quite so clear, yet looked at in the light of the views already expressed some solution may be forthcoming. Urticaria is perhaps the commonest anaphylactic phenomona there is. We are quite familiar with its appearance on the outside of the body because it is obvious, but have we any reason to think that it is limited only to the skin? There appears to be no reason why it should not affect all tissues; certain forms of hydrops articuli and the congestion of the bronchial mucosa in asthma are in all probability due to such conditions, so we have some good grounds to consider the possibility of cerebral urticaria. The relationship of cerebral edema and convulsions is well known.

I have during the last few years been able to relieve several epileptics of fits by clearing up certain focal infections. This is understandable as the result either of removing a source of bacterial invasion or of removing a foreign protein. With bacterial invasion, if too much fibrous tissue has not been laid down there is some hope of good results, but when there is already much deposited little can be expected, but if it is a matter of eliminating a foreign protein then much can be hoped for. That bacterial invasion is a cause of epilepsy is shown by the fibrosis found. That cerebral urticaria is a cause has yet to be shown. If such be the case then some benefit may be got by stimulating the sympathetic group, but no cure will be established unless that foreign protein, bacterial or otherwise, be eliminated first. Harrower, of Glendale, California, has been advocating the use of anterior pituitary body with thyroid extract and has claimed certain benefits in a limited number of cases. Whether this acts by stimulating the sympathetic group generally or locally is not clear. I have found that calcium is likewise of great benefit to epileptics and calcium is supposed to stimulate the sympathetic system, but I do not know if its action is due to that factor. My present treatment is to eliminate all focal or specific infections and stimulate the sympathetic group. One must also test out all the likely food proteins which may possibly cause anaphylaxis, the same as is being done in hay fever, always bearing in mind that the foreign protein of bacteria is perhaps the commonest and should be first eliminated.

That the intestinal tract is liable to urticarial swellings is suggested by the severe attacks of abdominal pain and vomiting that certain people suffer from who are anaphylactic to shellfish, honey, eggs, etc., and on whom such swellings can be produced by intradermic injections of the specific protein.

Such urticarial swelling is akin to, if not identical with, that of hay fever and asthma where the mucosa swells, the one being patchy, the other diffuse.

In reviewing these points we find that there is hardly one symptom belonging to the parasympathetic group which is not controlled by utilizing some endocrine product of the opposite group. Wherever improvement takes place under such conditions, it is very suggestive that such symptoms fall within the parasympathetic group. The same applies to symptoms that are relieved by employing such drugs as atropine and its derivatives in paralyzing the parasympathetic group.

When we try to reverse the action we find things are not so easy, as the parathyroid and thymus of which we have extracts do not have the same counteracting effect as the sympathetic group. Some have found eserine useful in counteracting the sympathetic symptoms. Personally I have found emetine hydrochloride the most useful. Apocodeine, which is useful in laboratory experiments in animals, is not so beneficial in human beings.

With regard to the endocrine products of the parasympathetic group they have not to my knowledge been employed in trying to counteract sympathetic phenomena and perhaps when more investigation is

done in this direction some useful results may be forthcoming.

Within a few weeks of writing this it has just been announced that insulin is useful in counteracting the symptoms of exophthalmic goitre, which falls into place with the views here expressed and is on a par with the action of adrenalin in asthma.

Following on this comes the discussion on the nature and treatment of epilepsy, with the opening paper by James Collier in the December 6th edition of the *British Medical Journal* in which some of the ideas put forward here have already been investigated, but what interests me most are the few remarks by the president (Dr. Grainger Stewart) who considers that the cause of epilepsy may eventually be found to concern the vegetative nervous system. He described a case of epilepsy in a patient of the vagotonic type, with greasy, blotchy skin and offensive sweating, in whom the administration of tincture of belladonna (twenty minims thrice daily) led to a cessation of the fits and remarkable improvement in the general health.

The available evidence rather tended to show that the vegetative nervous system might overact from either the sympathetic or the parasympathetic side.

We have here an independent opinion tending to the same line of thought and I think helps to confirm the views expressed here. Fully realizing that a vast amount of observation and experimental work (possibly more observation than experimental work) must be done before these matters are finally cleared up, I offer these views with the idea of turning thought into the channels I have laid down in this paper.

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The Phantasy Method of Analyzing Narcisistic Neuroses*

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It is the main purpose of my thesis to show that the narcisistic neuroses may be analyzed by what I term the phantasy method. I have gradually evolved and perfected the technic of this method during my analytic work of the past three years, and it may be said to have its sanction in Freud's statement that persons suffering from narcisistic neuroses "do say many things but not in answer to our questions." It is to these free and spontaneous utterances that our proposed method particularly applies.

Theoretically, we have some conception that primary narcisism comes into being at the first independent activity of the fetus in utero. During this period the different organs and structures, and perhaps the beginnings of the psyche itself as manifested in sensations and instincts, are endowed with libido. What is termed secondary narcisism follows the subjective primary maternal identification of the infant's attachment to the mother at birth. At the weaning from the mother—who is concerned here in the broadest sense of the infant's whole outer world—the infant divides his libidinal attachment; a part goes forward to form an objective libidinal activity, and the part that is embraced in the autoerotic libido is turned in upon the developing ego and serves as the libidinal complement of the latter. This latter organ is attached to the perception apparatus of the ego, which is engaged in continuous testing of reality, and to that portion of it especially given over to the sex impulses, and is also attached to the activity of the ego impulses. A portion of this ego libido complement forms the narcisism, which in greater part cut off from direct reality testing, encourages the ego impulses to build an object world within its own inner world of concepts. The circuitous and devious path by which the narcisistic libido brings this about is the special province of a large portion of modern investigation in psychopathology today. Just how the primary identification is detached from the mother-imago, is repressed into the unconscious and reappears in symbolic or conceptual formulations of somatic and psychic patterns, is not yet fully revealed, but under the masterful direction and leadership of Freud and his coworkers such as Ferenczi, Rank, Abraham and Jones, it is being worked out. We are not at present directly concerned with their worthy researches, nor can we give attention essentially to the manner in which the several clinical patterns of narcisistic neuroses and psychoses have come about. Data covering this part of the subject are naturally even more obscure than the former. Rather shall we turn our attention to the state of narcisism in general as manifested in its neuroses and their possible analysis.

It is freely admitted that not only is narcisism a natural component in every individual, but that it serves a specific purpose and value in successful living. But when it is so quantitatively and qualitatively disproportionate that it fails to serve the ends of reality (sublimated) it presents itself under various clinical forms of neuroses and psychoses and immediately calls for our best efforts of alleviation. At the very outset we are confronted with the barrier of an absent transference leverage by which we may analyze the condition. But by the conscious will and a narcisistic transference we may accomplish something, as has been so excellently suggested by Wälder. His aim, if I conceive it rightly, is largely to present certain aspects of the narcisistic components, those most healthful by reason of their better adaptation to reality to the ego impulses derived from the *id,* and thus bring about a natural sublimation which, as Freud has shown, is possibly the way to sublimation, even for all libidinal conflicts. Ingenuous and valuable as his procedure is, I have undertaken quite independently another approach to the problem. Impressed with the fewness of early data of affective attitudes of all types of narcisistic patients and their highly protective and

*Abstract of paper read before the Ninth International Congress of Psychoanalysts, Bad Homburg, September 3-5, 1925. Complete text is in the process of publication.

specious rationalizations, and in the absence of free association of direct memory, I have instituted a phantasied recall of the infantile life itself, especially of the mother-and-child relationship in the primary subjective maternal identification period. If this period is the crux of the secondary narcisism, the very foundation of the later narcisism, then all means of its recovery in any form must be of value in gaining knowledge of the formation of the narcisistic attitudes, feelings and thoughts of adult life.[1]

At the very outset I wish to disclaim that the phantasied material I have reproduced is a facsimile of actual memories of infantile experience. To do so would naturally stultify all our present psychologic knowledge of this epoch. But I do maintain that these phantasies throw a flood of light upon the affective states during these infantile reactions in the secondary narcisism of mother-identification and the integration of the character and personality consequent thereto. The phantasies are therefore psychologically true if not actual memory reproductions of this period. They are, moreover, worthy of continued investigation in narcisistic neuroses. Furthermore, the method for resolving various forms of narcisistic disorders—such as dipsomania, homosexuality, melancholia, essential epilepsy and confirmed stammerers—has so far as used been surprisingly satisfactory.

THE PHANTASY METHOD

In order to avoid the protective mechanism that lies within every narcisist, and in the absence of the transference which these subjects are unable to establish, I have instituted the phantasy method. In effect, this is comparable to inducing a mild self-hypnosis. It may not seem unlike a form of day dreaming, or certain phases of psychogenic hallucinosis in which mild degrees of clouding of consciousness obtain. This procedure brings about a certain disorganization of consciousness, and, moreover, the displaced primary personality of the narcisist is enabled to gain the power of insight into the intricate pattern of the narcisism which has been built up from the identification with the mother, in the exaggerated and enduring dominance of which it owes its power and sway over the entire life of the individual. The form of transference which is finally evolved is, of course, essentially narcisistic or of the parental type rather than the lover, which so universally obtains in the transference neurosis.

The physical situation for phantasial analysis is not dissimilar to that in ordinary analysis,—couch, reclining posture, etc. The patient is directed to close his eyes and face away from the analyst. He is then requested to imagine or phantasy the subjective feelings, attitudes and behaviors of an infant preferably from the first day of birth. Commonly but little or nothing is produced in the first few seances. The patient is discouraged and somewhat bewildered in analyzing in this manner without the factual data of the dream and association method. Soon, however, the phantasial material gradually changes from a stilted and reportorial fabrication to matter that is shot through with instances of emotional feelings of the infantile life. Often the patient is inclined to believe they are actual memories. After a little he usually comes to the realization that they are automorphic retrojections having all the affective values of infantile memories, bearing their emotional insight as to the formation of specific attitudes, and finally bringing to light the more definite narcisistic fixations upon oral, anal and urinary eroticism, the direct outgrowths of the nursing act and the weaning trauma. The infantile utilization of these erotic fixations as magic behaviors is the very beginning of the narcisism. Continued analysis of these primary fixations enables the patient to trace step by step the successive orders of repressions and the repeated reappearance of more complicated object, aims and ways of thinking of his whole mental life. The most complicated systems of concepts which result from the unacceptability of the infantile magic ideas to reality are woven into the behavior and ways of thinking of these patients. They operate their entire lives upon these distorted patterns, the divesture of which comes about slowly through the new insight of phantasy analysis. The exact delineation of these behaviors has for decades been the chief object of descriptive neuropsychiatry.

The keenest conflict imaginable continues in the ego between the displaced portion of the personality and that part of it which is given over to identification with the mother. The rupture of the autoerotism of nursing causes the identification to fixate deeply into the erotic patterns of infantile magic surrounding the oral, anal and urinary functions. Perhaps the adult ego draws its power largely if not solely from the strength of the remaining unidentified part of the personality, and the infantile magic that gives color and depth of feeling is largely derived from sublimations of the identification portion. Only time and more patient investigation can clear these points. At any rate, in the ego neuroses the conscious desire to recover, plus the narcisistic transference added to it as it not infrequently is with object libidinal transference, are our talismanic advantages to illumine and subdue the narcisism formed from the maternal identification, especially those parts that are so prejudiced to instinctual sublimations.

To revert to the clinical technic of the method for a moment, the analyst may resort to an active therapy of creative art engrossment for the patient both before and during the analysis. The patient must, however, find these occupations for himself and continue to control them. The refined and elusive narcisistic disciplines of the analyst have no place in the uses of the phantasy method. The patient has his first chance in the interpretation, and it is surprising to note how little the complicated terminology of psychoanalysis is necessary for the patient to work out his salvation. He is not didactically or technically wise but recovers without zeal or propagandic tendency.

Only by fashioning and refashioning the different angles of insight into the conceptual behavior of this internally conceived world of the narcisist may the patient finally reconstruct a true picture of his dilemma, and he will act upon this new insight just as soon as it is deep enough to release the repressions and fixations. The aggregations of conceptual symptoms which the narcisist brings are but distorted

[1] In all my initial studies of the significance of the primary identification with the mother I am indebted to Burrow's work in this field which has helped so materially in our comprehension of the essential foundations of ego development and its perversions.

symbolizations of the cruder infantile patterns of magic needs drawn from the unsatisfied longings of the weaning period. They often disappear like mist so soon as the narcisistic transference is established, a restoration of the comfort producing state of attached nursing. Thus the real neurosis is at last revealed made up of the components of castration fears, inferiority, sadomasochistic, oral, anal and urinary erotism. These, then, are the defective states which the phantasy method uncovers. In brief, the birth and weaning process and their libidinal significances all come into being again. Many patients are reduced to the veritable defenselessness of infants and may for a time complain bitterly of their worse plight. Rather should the latter state endure longer so that the narcisism may gain a fuller cathexis and not reform so soon into a somewhat similar pattern to that of the old one. The very primitiveness of the narcisistic pattern precludes any rapid analysis as has long since been fully noted by Freud and his coworkers. The resistances are really enormous.

At some point during the treatment, most frequently at the beginning, occasionally a patient who either too perfunctorily produces his phantasial material or is too deeply engrossed in the mere detailment of it, will grow negligent in keeping notes of the exact previous analysis which every patient is requested to make. Time after time he will appear for analysis without them, and although he has been told it is a matter of routine that he bring a transcript of the previous interview, each day he will say that he thought after the main thoroughfare of infancy was demarcated further notes were unnecessary. Though reminded that such is not the case he will persistently skip many sessions; these elided ones are always significant and worthy of analysis. Still later, many patients grow restive and complain that knowing they must bring in a written record they feel that the procedure "cramps their free style or analysis." Long and elaborate defenses of their resistance to writing notes are often forthcoming seemingly made with the best of reasons. But on specific analysis one finds that these very specious resistances are but a part of the narcisism and the patient's unwillingness to do his share. It is as though the patient unconsciously made use of his infantile reactions and said to himself: "Now, I will tell mother (the analyst whom he has invested with narcisistic transference) all my troubles, and as to her asking me to fulfill my part by doing any work, well, she will excuse me I know, for she loves me, she will understand that it is really too great a task." This species of resistance is far from any ordinary malingering desire to be let off from work in analysis and is not dissimilar to like resistances to the routine of ordinary analysis. It differs from the latter in being much more plausible and cleverly rationalized. As is usual, such formulations of narcisistic resistance are found to be a storehouse of similar attitudes in all the life reactions.

Many patients term case notes "a monotonous, disagreeable task," yet they talk daily, on and on, about their most intimate infantile experiences which their intelligence must tell them are the most tedious topics imaginable to the analyst, yet rarely do they thank the analyst for his forbearance beyond a fair monetary compensation for service. Perhaps none who do not feel a mother's loving concern could afford to labor at such a monotonous task at such a low remunerative rate, and as parental love the patient reckons it. The patient makes a bold statement of the "stale unprofitableness" of casenote return, but by what other term can the object-libidinal world be better designated? As Wälder aptly comments, "To the narcisist the outside world means far too little for him to give its laws sway over his mind." Many patients try to relieve the situation by making something literary of their reports in order to add to their lustre and worth, and put in quotations of a wide discursive sort which are of doubtful illustrative moment. When duly requested to keep an accurate account with no embellishments save for marginal notes of other pertinent data which have occurred to them in the process of recalling an interview, they are much disturbed and chagrined. But even the more free phantasied analysis has its disciplines, not in the matter of interpretation of material, for that is a process of spontaneous and slow awakening on the part of the patient, but rather in his submission to the technic which lies at the root of all good science and art.

In my complete text I give one or two illustrations of patients who previously were unable to give any data earlier than four or five years of age, to show what a wealth of phantasy is presented for continued analysis drawn from this infantile period. The following was preceded by the phantasy of infantile life. No sooner had the procedure been established after two seances than the patient "broke through" into the sequential socalled personal or actual memory recall. Although this, too, is probably an automorphic retroprojection, it is given in all the emotional coloring of a real memory. We may say, therefore, the material is psychologically true.

Example—Miss F. B. "During the analysis, as I attained a state of physical and mental composure, all thought processes seemed to cease. A thick, velvety darkness seemed to settle down over me. My whole being was permeated with a delightful sense of warmth and comfort. There was no localized physical feeling. There was no differentiation of the parts of my body. I was a complete whole—warm, suspended in inky darkness. I was conscious of moving but the movement was accompanied by absolutely no effort on my part. It was a smooth swinging motion. There was no emotional feeling, simply a state of heavenly comfort, warmth, motion, no effort. Then a sudden feeling of cold. The velvety darkness was gone. I was conscious of something rough and cold on my body—hands, I suppose. I was uncomfortable—I seemed to want to protest against the light, the handling—I cried——.

"I see a baby lying in a little white crib cooing and waving its hands aimlessly about. Now a strange feeling of delightful contentment steals over me; there comes an impulse to move my hands before my face, to utter cooing sounds of pure comfort—why, I am that baby! The ceiling and the walls of my crib are the boundary of my world, and my world has no flaw——. Now, there is a vague sense of things not being just right—I am not so comfortable. I seem to know that if I cry the situation will be remedied. I hear footsteps—my hands

and feet move—I am trying to express my eagerness, my joy for what this beautiful person is going to do for me. She picks me up and moves from the crib to a chair. Soft arms hold me close, and now there's something soft and white above me—that's what I've been wanting, what I've been waiting for. It's in my mouth, warm and soft and round. There is a pressure and release of my tongue against it. Something warm and rather sweet in my mouth and I swallow. What bliss, and it comes without effort. It isn't difficult to move my lips and tongue. I didn't learn to do it—it simply is a part of me and this person with the beautiful face who bends over me is the one who gives me this part of myself."

This is but a sample of actual working data supplied by the phantasy method; the complete text presents the whole matter in elaborate detail. The results in general of the use of the phantasy method are in proportion to the completeness of the libidinal recall in the formation of the narcisism. The form of transference is quieter, and the patient gains a power of insight that is most noteworthy.

As Schilder states, the limits of these behaviors which the perceived real world portends to the imagined actual world (the world which is comprehended only by concepts) are not drawn too sharply. Even the world of phantasy is extremely near the actual world.

I may summarize the main contentions of my thesis:

1. That from the subjective identification of the child with the mother we have the beginnings of narcisism which in its undue and enduring magic-like dominance entails various narcisistic neuroses and psychoses.

2. That by the phantasy method under a narcisistic transference we are able to recover the psychologically true values of this secondary narcisistic period and thus induce a real insight and sublimation of so much of the narcisism as may be necessary for the well being of the individual.

3. That from illustrations in my main text I have made a successful beginning in the phantasy analysis of narcisistic neuroses and psychoses such as in melancholia, dipsomania, essential epilepsy, confirmed stammering and in general narcisistic neuroses without specific category.

DISCUSSION

Dr. Paul Federn, of Vienna, said he would refrain from entering immediately into a discussion of the theoretical conclusions reached by Dr. Clark. His paper emphasized the earliest relations to the mother as the most important feature in the development of the narcisism and as the stage in ego development upon which the strongest fixations, normal and abnormal, are regularly maintained. The technic which the author used with his theory as a foundation, was a fully orthodox Freudian psychoanalysis. It was even, as Dr. Clark himself said, a sort of over-analysis, because the normal pschoanalysis is, really, a method of communication between the patient and the analyst, while the phantasy method is purely a monologue on the part of the former. We generally have used fancies and day dreams as we use dreams; that is to say, as material to be analyzed by way of free association, starting from the single image or element of the phantasy-product. But some of us have already observed, and Rank has applied this as a method, that the producing of dreams is, itself, some sort of abreaction and causes some degree of readjustment to take place. In the same way, the phantasies systematically produced in the phantasy analysis are of value because of the liberating and remedial effect which they have on the narcisistic personality in case that personality is unable to make the transference, which is necessary for the communication of free associations. It seems to be an important and valuable improvement of method to indulge completely narcisistic personalities in their narcisistic tendency to introversion, in which they go so far as to phantasy that they actually return to their earliest stages of narcisistic perception of the external world, stages which—as Dr. Clark said—go back to their second and first years of life.

At this point he wished to lay stress on the difference in this method as compared with the advice given by Freud. Freud says that it is our task, in psychoanalyzing, ever and again to lead the patient from repeating the past to reenacting the past. The patient will relive his past conflicts and desires in the transference, with the analyst. By overcoming the resistance transferred to the analyst, recollections of the real events themselves and of the situations come more and more to the surface. All this difficult process Dr. Clark tried to render superfluous and to a certain extent he succeeded in doing so. He resigns himself to the absence of transference and is satisfied if the patient reproduces his past in fancies. The difference in the two technics is striking but it does not affect the essential points of psychoanalysis. Dr. Clark was led to his method by the type of his group of patients who were narcisistic and without the amount of object libido necessary to act as a solid carrier for the transference. Freud said long ago that for the narcisistic diseases the usual method of psychoanalysis would have to undergo some alterations. Just such an entirely legitimate alteration is supplied by the phantasy method introduced by Dr. Clark. It makes a circuit, necessitated by the introverted libido of the patient, and tries to make use of the patient's narcisism itself in order gradually to attach to the silent hearer of his fancies the minute quantities of object libido (sometimes this object libido is, in the beginning, only an exhibitionistic one) which accompany every narcisism. If one understands and accepts the method adopted by Dr. Clark, with the intention of stealing into the narcisistic entrenchments of such patients, one will not be surprised that some of the technical rules of psychoanalysis are completely neglected. Dr. Clark does not require the patient to keep fixed hours, and does not interrupt the patient so long as he is in the mood "to remember" by producing fancies. His method of conducting analysis is the natural result of being without the transference. The individual relation to the analyst is of so little importance in the proceeding that no agreement between patient and physician need be established. The way, however, gradually to attach the interest of the patient to the analysis and to the analyst, and indeed to have the opportunity to analyze at all, is to make the rule that the patient shall write down the contents of the last session before coming to

the next. In this literary reproduction of the fancies ingeniously produced, the patient must think also of the one who is to read them, and begins to devote his interest to the task of writing, as well as to the analytic questions and explanations he has to expect from the analyst. Sometimes this writing is—as in the first year of school life—a means to develop an interest in the idea of "working" at all. This variation of method is well adapted to the difficulties offered by the narcisistic cases. In every psychoanalytical treatment it is necessary to satisfy to a certain degree those libidinous tendencies and desires, the denial of which, the *versagung,* started the morbid reaction and established the neuroses. This is necessary so that the patient can overcome his resistance against bringing forward into the conscious mind the repressed parts of his life and of his personality. In the normal method the positive transference and the negative are used to invest the readjustment with the maximum of satisfaction. When narcisism prevails, enough of the unsatisfied narcisistic needs must first be satisfied in psychoanalysis before an analysis can work at all. This seems to be made possible by respecting the patient as a completely narcisistic person until he has once more lived through the original narcisistic period of his life, lying and producing fancies, behaving like a suckling, but with an attentive listener at his side.

Dr. S. Ferenczi, of Budapest, said he wanted to express his interest in the success Dr. Clark described as the result of his treatment of narcisistic neuroses. His own efforts in this respect were far less satisfactory. As Dr. Clark read his communication, however, he gained the impression that his method was rather the suggestion of a special phantasy or phantasies. At any rate, it has more to do with abreaction method of Breuer and Freud than with the thorough investigation of the whole libidinal and ego development which is the present psychoanalytic method.

Dr. Clark (closing) said he was glad to know that Dr. Federn, with all his knowledge of psychoanalysis so valuably collected from the researches of Freud and his coworkers, and especially with his experience in the transference neuroses, was so clearly able to visualize the main principles of the phantasy method and give his approval to it as a matter of analytic procedure worthy of respect and continued trial in an attempt to unravel the mystery still surrounding the narcisistic neuroses. As regards Dr. Ferenczi's remarks, Dr. Clark did not believe that Dr. Ferenczi had understood the full purport of the paper which had been so briefly presented in abstract when Dr. Ferenczi said that the method only looked toward the analysis of some very special or suggested phantasies and was therefore not broadly psychoanalytic and thus failed to make a thorough investigation of the whole libidinal and ego development. Dr. Clark's paper stressed the whole infantile life in all its libidinal connections for at least the first few years of existence; what could be more thorough or broadly psychoanalytic? There was, perhaps, some justification in Dr. Ferenczi's statement that the method was akin to the former method of Breuer and Freud, but it was more than a catharsis of conscious and foreconscious material but actually brought up indubitable data from the painfully repressed infantile life that has a remarkable verisimilitude in content with the pregenital unconscious material only inferentially arrived at by former psychoanalytic interpretations. Both data he held to be psychologically true and each had their unique advantages. When obtainable by the phantasy method is was so much more abundant and easily brought into consciousness and moreover had been produced in cases absolutely intangible to any known technic of ordinary analysis. Only further investigations would determine its full curative utility and as a beginning he offered it for general psychoanalytic use as part of or supplemental to our present psychoanalytic technic. He was glad to know that several of the members of the organization had expressed their intention to try out the efficacy of the method in their own cases.

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Diverticulosis

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2. The result of incarcerated concretions and gaseous distention varies from slight abrasion of the mucosa to perforation through the wall of the sac and may set up an abscess localized to the tissue outside the sac. Such an abscess will gradually enlarge until it bursts into the bowel through the original opening connecting the intestinal lumen of the diverticulum, or the peritoneal cavity, or on to the surface of the abdominal wall. It may become adherent to the bladder and burst into that viscus causing a colovesical fistula. Or as the result of some sudden increase in pressure the ulcer may burst suddenly into the peritoneal cavity and the resulting escape of material from the bowel will then cause a general peritonitis. Abscesses have formed in the intestinal wall, outside the wall surrounded by coils of small intestine, in the mesentery and extending to the liver and left kidney. Abscess formations have simulated carcinoma. Fistulous tracts have resulted between the sigmoid and the small intestine and the abdominal wall. In some cases the fistulous communication may be direct between the diverticulum and the viscus, although, oftener, it occurs by way of an interposed abscess cavity. More than one perforation has been observed in multiple diverticula.

3. Acute or gangrenous inflammation may occur with symptoms so simulating appendicitis as to suggest a transposition of the viscera.

4. The most constant pathological finding is the chronic proliferative extramucosal inflammation. This chronic process following infection is an inflammatory reaction due to leakage of toxins or bacteria through the mucosal layer of the diverticula. It is usually accompanied by inflammation of the diverticular mucosa, but this is frequently not advanced and in some cases is indiscernible. Wilson (46) and Telling (47) have both emphasized the essential rôle of this process and designated it peridiverticulitis. In McGrath's collected twenty-six specimens presenting peridiverticulitis there were only five where the mucous membrane of the diverticula was extensively involved, in nineteen the inflammation varied from mild to a moderate degree, and in two it appeared intact.

TENDENCY TO CARCINOMA

This inflammatory condition is accompanied by the deposit of large masses of fibrous tissue, movable or fixed and further adhesions in the neighborhood of the diverticulum. This increasing mass of fibrous tissue will seriously stenose and angulate the bowel. In some cases acute or chronic obstruction has been produced in the small intestine. The sac wall becomes thickened and firm, and as a result of this and the deposits of exudates (round cell infiltration) and cicatrical tissue around it, a dense elastic tumor is formed, which later because of its size, form, consistency and macroscopic appearance is frequently mistaken for carcinoma.

Of gravest importance is the frequency with which carcinoma is implanted on the inflammatory process of acquired diverticula even without ulceration of the mucosa. This tendency to carcinoma occurs particularly in diverticula in the sigmoid. In McGrath's twenty-seven cases, carcinoma was present in seven (25.9 per cent). All of these were cases of advanced peridiverticulitis.

In considering this percentage (25.9) however, it is of the strictest importance for us to distinguish between the occurrence of diverticula in general, many cases of which are discovered incidentally at autopsy, and cases of diverticula with pathological processes so extensive as to give pronounced symptoms. In McGrath's cases the inflammatory changes were advanced, a mass was present in each and the symptoms were marked. Therefore, it is in such cases as these alone that the per cent (25.9) of carcinoma is to be considered.

That irritative conditions such as are present in these infections of intestinal diverticula are contributing causes of carcinoma, is a view supported by the observations of several authorities. Among the causes cited are chronic inflammation, cicatrices, bacterial irritation and trauma. From evidence based upon over 1,200 personal observations, W. B. Coley concludes: "Local trauma of any kind from chronic irritation to a single local contusion is not infrequently the direct exciting cause of malignant tumors of all types."

A consideration of this pathology is important to the clinician inasmuch as it indicates that symptoms are not to be expected at least in the early stages of the process.

PATHOLOGICAL ANATOMY

Gross appearances, external aspect.—The tumor is usually round or ovoid in shape, the smaller diverticula being oblong with the long axis transverse the bowel. Its surface is lobulated with many prominences varying in size from minute specks to that of a small cherry. The whole surface having a mottled hemorrhagic appearance. In some cases the surface presents a ribbed appearance, the elevations running parallel with the fibres of the circular muscular layer and suggesting a bulging of the mucosa between the bundles. These elevations are more numerous and largest near the bases of the appendices, epiploicæ, at the mesenteric border, or between the layers of the mesentery.

By dissection McGrath has found that the prominences correspond in general to those points where the vessels disappear into the muscular layer of the intestinal wall. The entrances of the larger vessels are commonly noted near the edges of the longitudinal bands, sometimes inside the edges, between widely separated bundles of the muscular fibres. The entrances of the small branches are variously situated on the haustra.

Each set of vessels is covered with a band of fat, which in the case of the larger branches, is continuous with that of the mesentery and terminates as an epiploic appendix in close relation to the vascular entrance.

Internal aspect.—On the mucosal surface are noted round or oval openings, and in others short transverse clefts. From these points plugs containing gelatine may be expressed and then thin walled pouches demonstrated. These openings on the inner surface corresponded in location to the elevations on the outer surface. Histological examination confirm the experimental and anatomical observations as to the common association of these processes with the course of vessels through the intestinal wall.

Examination of the muscular coat of the large bowel showed that the longitudinal layer, excepting in these bands, is usually very scant or entirely wanting and that frequently the circular layer is thin, its bundles separated, and its structure deficient.

In some instances microscopic examination reveals beginning projections of the mucosa and submucosa between widely separated bundles of the circular muscle without vessels directing their course.

There is occasionally a marked bulging and thinning of a sacculus especially in the lower part of the sigmoid where sacculations of bowel are smaller.

Microscopic examination of sectioned diverticula walls show them composed of mucosa, submucosa and remnants of muscle fibre, but in some instances only the inner and outer tunics are demonstrable.

In the study of a diverticulum of the sigmoid which was undergoing cancerous change, Mellon found on sectioning the entire tissue and carefully examining each section that one presented a suspicious area. This manifested itself by an interruption of the integrity of the mucosa, which in other places was sharply delineated from the underlying muscle. The limiting margin changed to scalloped where the growth became invasive.

Microscopically there was a steady increase of atypical tubules until the definitely carcinomatous area was seen.

The atypical character of the cells was recognized in part by their very hyperchromatic nuclei noticeable particularly in the lower levels of the affected glands. This abnormality, however, did not respect even the superficial portion of the tubules as the carcinomatous portion of the tissue was approached.

A well marked, round celled infiltration was present throughout the diverticulum, being particularly well marked in the atypical portions. It was present beyond the muscle walls, in some granulomatous tissue—peridiverticulitis. It is of note that all layers of the gut participated in the angulation process, but the mural layers, although everywhere present, did not always follow the tortuosities of the mucosa. The spaces enclosed by the sinuosities of the latter were usually shown to have definite connection with the lumen of the intestine.

In explanation of the frequency of malignant transformation in these cases, it is noteworthy that an apparently significant combination of contributory causes is here present. In support of the theory that "tissue tension alteration" is an important factor in neoplastic initiation, it would appear that in diverticulosis we have an example par excellence.

In the complete type of this condition, the labyrinthine windings of the mucosa, together with the obliquity and consequent separation of the muscle bundles, bear testimony to the interstitial strains that must be the resultant of these processes. And in mucosal hernia as it exists in a viscus, more or less constantly contractile, interstitial strain must again be unavoidably associated with histopathological changes in evidence, viz., passive congestion, hemorrhage, and dilatation of the incarcerated gland structures.

Nutritional disturbances are the logical sequel of this mechanical stress, which in their turn invite infection, a factor of neoplastic importance.

SYMPTOMS

Opinions vary concerning the etiology and pathology of diverticula and therefore a clear conception of the symptomatology is wanting. Owing to the definite clinical aspect, early stages of inflammation have been overlooked or misinterpreted. Its advanced stages have been diagnosed as malignant and consequently deficient treatment employed.

Sacs may remain inactive for years or at any time become infected and inflamed, causing symptoms frequently mistaken for appendicitis, peritonitis, chronic intestinal obstruction, new growth or pelvic abscess. That definite symptoms are absent in almost fifty per cent. of cases is indicated by the frequency with which diverticula are unexpectedly discovered during röntgen ray search or necropsy.

The following statistics compiled by Telling show that in 13,068 necropsies diverticula were discovered eighty-three times, of which thirty-nine were congenital, or true, and forty-four acquired or false.

TABLE I. OCCURRENCE OF DIVERTICULA

Institution	*Necropsies*	*Meckel's Diverticulum*	*Diverticulum in Small Intestine*	*Diverticulum in Large Intestine*
Dresden City Hospital....	8,133	8	1	6
Johns Hopkins Hospital..	2,600	15	14	18
Boston City Hospital.....	1,382	11	1	1
Bender Hygienic Laboratory	953	5	0	3
Total	13,068	39	16	28

Their importance depends almost entirely upon the part of the alimentary tract affected. In the small bowel they cause, as a rule, no trouble, and are only discovered accidently, but in the lower half of the large intestine they are a most important clinical condition. It also happens that the pelvic colon is where they most frequently occur.

The character of the contents of the diverticulum determines whether it remains symptomless or not. The small intestine is filled with fluid material while in the lower part of the colon the contents being semisolid or firm, tends to be retained, and to set up secondary changes in the walls of the diverticulum. It is important to realize that the diverticula themselves are not harmful, it is the fact that they retain old fecal material which is the cause of possible trouble.

Diverticula more often occur in middle or later life and as a rule, but not always, in obese persons.

Statistical data of cases operated in at Mayo's Clinic from May 1, 1902, to January 1, 1912, show:

TABLE II.

Number of cases	27
Twenty-five specimens were obtained from operation, one from autopsy. One case was drained; surgical diagnosis, diverticulosis.	
Sex,	
Males	21
Females	6
Age,	
Youngest	40
Oldest	73
Average age	54
Operation,	
Resection	21
Partial resection	4
Ileocolostomy	1
Drainage	1
Location of initial disease,	
Sigmoid	20
Sigmoid and rectum	1
Rectum (at anal ring).....	3
Hepatic flexure	2
Descending colon	1

The symptoms of diverticulosis of the large bowel are analogous in many ways to those of appendicitis, except that the location is less constant. In the early stages patients complain of abdominal uneasiness, discomfort and sinking sensations, digestive disturbances, moderate constipation and gas accumulation.

Later when the inflammation has extended deeply into or through the diverticulum (peridiverticulitis), localized tenderness and cramps are complained of, with marked constipation alone or alternating with diarrhea, the sensation of blocking, fecal impaction and painful, indefinite swelling in the sigmoid region (left sided appendicitis). The symptoms are often subacute and accompanied by a moderate rise in the temperature, seldom above 102°. In a few days the pain, tenderness and swelling may subside and in two or three weeks the patient recovers. Wilson has shown that the symptoms are seldom those of diverticulitis but more often of a peridiverticulitis.

In the severe cases when the bowel is almost occluded there is marked gas and fecal retention, severe pain, muscular rigidity, nausea and vomiting, obstipation or coprostasis, diarrhea, leucocytosis, increased pulse rate, irregular or high temperature and (when the diverticulum is infected) there is mucus, pus or blood in the stools.

Abscess formation may develop with spontaneous rupture, most frequently through the bladder. This may result in a permanent vesicosigmoidal fistula. When perforation of the ulcer takes place into the peritoneal cavity a spreading peritonitis appears. At such times the Ochsner treatment is to be carried out until the acute condition subsides to a chronic state. Between the attacks symptoms and size of the tumor diminish and the swelling is smaller when the sac is temporarily freed of gas, feces and pus.

Fistulæ between two portions of the intestine may occur and rarely heal spontaneously. Occasionally they lead to the formation of other abscesses which may rupture spontaneously with the formation of multiple fistulæ.

CLINICAL DIAGNOSIS

In reviewing the clinical aspect of cases cited in the literature it is instructive to note the possible errors in diagnosis and the gradual increase in clinical recognition of diverticular infections by those whom experiences with several cases has impressed.

Diverticulitis and peridiverticulitis mimic and must be differentiated from neoplastic tuberculosis, chronic appendicitis, actinomycosis, intestinal obstruction, carcinoma, chronic sigmoiditis, sigmoiditis with carcinoma implanted, fecal impaction, encysted foreign bodies, pelvic peritonitis, ovarian tumor, other disease of the adnexa, vesical tumors.

As was natural in the earlier cases with masses involving the sigmoid and upper rectum, occurring, as they usually do, in the socalled cancerous period of life, the diagnosis of malignancy was commonly made. From the knowledge acquired through operation and pathological reports, the clinical diagnosis has become more conservative and more recent cases have been positively diagnosed before operation.

The obscurity which has always existed about this pathological condition is to be expected when we consider that it is a condition likely to be overlooked at necropsy and which may be harmless and symptomless during life.

Other sacs cause but slight disturbance but in a typical case the symptoms and signs of diverticulitis and peridiverticulitis are characteristic. The chief symptom is usually a chronic leftsided obstruction associated with the presence of a tumor in the left iliac fossa in an adult patient.

Abdominal palpation and a bimanual examination will usually reveal the presence of a rather firm, oval, fixed tumor, in the left iliac fossa or lower part of the pelvis, but will not enable one to distinguish between the two conditions. Symptoms of chronic constipation or obstruction over a long period are usually present, and will be in favor of diverticulitis rather than cancer. A careful record of the evening temperature is often of assistance. A raised temperature in cancer is rare, whereas in diverticulitis the temperature is often raised to 99° or 100° in the evening over long periods. A leucocyte count may be of assistance. A positive count being in favor of diverticulitis.

While the history of a slight amount of blood in the stools is very common in carcinoma, it is usually absent in diverticulitis, and this affords a valuable means of distinguishing between the two conditions. It is by no means invariable, however, as blood is occasionally found with diverticulitis, and also the patient may be suffering from piles.

A sigmoidoscopic examination should always be made, and will sometimes afford valuable evidence. Occasionally a definite annular stricture without any break in the lining membrane may be seen with the sigmoidoscope. Such a finding, associated with symptoms of obstruction and a tumor, will be very much in favor of diverticulitis, as against cancer. Usually, however, the colon is so fixed by adhesions that an instrument cannot be passed far enough to actually see the stricture.

Through the sigmoidoscope the mucosa may appear smeared with pus, or an opening may be discovered through which pus is discharged and a probe may be introduced into the sac. Owing to the frequency with which fistulæ connect the bladder and diverticula cystoscopy and examination of the urine for pus are advisable.

It was only with the advance of röntgenology that full recognition of its clinical significance began. It is also important that the surgeon see his fluoroscopic examination personally, because no laboratory report and no röntgenogram can teach him as much as viewing the moving picture with his own eyes. The röntgenograms are later of great value. Owing to their better definitions and their permanence, some features appear in them not visible with the fluoroscope.

Röntgenographic demonstration is often impossible, but when the lumen of the diverticulum communicates with the bowel, the pouch may sometimes stand out clearly from the bowel in röntgenograms taken following the administration of barium enemas or meals. The diverticulum is most clearly defined when the sigmoid is empty. The patient should, therefore, be examined after a barium meal has been passed *per anum*.

As Telling's report shows, a very great number of these masses have been removed and their true pathology not learned until long afterward when they were subjected to a detailed pathological examination; but this exact diagnosis is not vital since removal of the tumor is imperative in every case. The importance of being able to distinguish between these conditions lies in the fact that if diverticulitis is mistaken for cancer, as the tumor is large and fixed by adhesions, hence it usually follows that no operation is performed, and unless, which is rarely the case, complete obstruction is present, it thus may happen that a patient who might have been saved by an operation is not operated upon until it is too late.

Perforation of the diverticulum into the bladder with the subsequent development of a sigmoidovesical fistula is a not uncommon complication; Mummery has seen it three times in his twenty-four cases. Cripps (49) after searching into this subject finds that enterovesical fistulæ are far more commonly the result of inflammatory mischief than due to perforation from cancerous growths. Vesicoenteric fistulæ due to infective or inflammatory factors are usually secondary to abscess formation or reduced resistance of the tissues, which are devoid of drainage or have inadequate drainage, and following the laws of gravity or the lines of least resistance they point through and rupture into the urinary bladder.

Bladder symptoms come on acutely with rigors and the passage of flatus and feces *per urethram*.

Even with all this infective material constantly working into the bladder a serious cystitis does not always develop.

Diffuse inflammatory changes occurred in fifteen of twenty-six patients subjected to cystoscopic examination as reported by George Sutton (50) who concludes that a probable cause for the usual freedom from a diffuse cystitis is that distinct lymph channels are absent within the mucous membrane; that the mucosa is made up of transitional cells of the expansile, protective and nonabsorbable type and that the amount of infective material is being diluted and kept in motion by the ingress and expulsion of the urine, and by muscular activities.

The inflammatory changes in the bladder are somewhat dependent upon, 1, the size of the fistulous opening; 2, the amount and character of the bowel contents and foreign bodies passed into the bladder; 3, urethral obstruction, as in stricture or hypertrophied prostate, and the amount of residual urine, and 4, the type of infective organisms. The urethra may also become clogged by a fecal mass, or other foreign body which may not only cause paroxysms of pain but may help to distend the bladder, especially if the fistulous opening is valve like. In this manner infective agents may be induced into the urethral openings and cause an ascending ureteropyelonephritis.

Vesicosigmoidal fistula may be shown by the cystogram and may be demonstrated by proctoscopic examination. Methylene blue injected into the bladder will pass through the rectum, also, if the solution is injected into the rectum it will pass in the voided urine.

With the assistance of the clinical pathologist a great majority of the cases may be diagnosed during operation, but some require a further pathological investigation in detail. Thus it may be seen that generally speaking, the final diagnosis rests with the pathologist, therefore, the prognosis should be withheld until such examination has been completed.

PROGNOSIS

The prognosis as to life depends principally on malignant or nonmalignant factors, peritonitis, metastatic foci of infection and embolism. Uninflamed pouches may be unfolded or removed with practically no mortality and by prompt recovery. Where peridiverticulitis exists there is some mortality which varies with the extent of the infective process and the response of the patient to medical or surgical treatment. In acute crises complicated by obstruction, peritonitis or abscess the mortality is high. In the three cases reported by Mummery the perforation healed in time after colostomy above the stricture had been performed.

TREATMENT

The treatment of diverticulosis depends on many factors. If the patient is a poor surgical risk it should be palliative. Many patient's lives can be maintained with little or no inconvenience by keeping the feces soft or liquid with laxatives and oils (never purgatives), belladonna and morphine, liquid diet and frequent warm high enemas to empty and cleanse the bowel. Such a course of treatment relieves pain, colic and muscular rigidity and is of much value both as tentative treatment and as preparatory treatment for later surgical procedures. All patients so treated must, however, be carefully watched for stenosis of the bowel or evidence of peritonitis. Later when the condition of the patient allows and circumstances are favorable, surgical intervention is to be planned. The choice of operation will depend on many circumstances which the surgeon must value according to the individual case.

Diverticulitis is a surgical condition since there is no way of destroying the sac except by operation. Numerous small pouches and those of moderate size that have not undergone secondary stanges may be buried by coloplication or ligated, excised, and the stump inverted with a purse string suture or the wound closed, if long, with through and through reinforced by Lembert stitches.

The ideal treatment is to resect the mass and rejoin the ends of the bowel, but this is impractical when diverticula are numerous and widely scattered. Very often this is not possible on account of the dense adhesions to surrounding structures. Nor is it advisable to attempt to separate these adhesions. They are not only very dense, but intersected with septic foci which if disturbed will very probably set up acute peritonitis.

Usually diverticulitis and peridiverticulitis are complicated by infection with abscess formation. If an abscess forms we should not wait for it to rupture spontaneously but should separate its binding adhesions if possible, then incise and drain the cavity.

When there is a fistulous opening between the bowel or bladder and diverticulum, after the sac has been dissected free and the edges cauterized, the aperture is closed by infolding sutures.

In the great majority of cases resection of the affected portion of the colon is not possible, and the alternative lies between shortcircuiting the stricture, or performing a colostomy above it.

If a short circuit is done it is important to be sure that only healthy bowel is used for the anastomosis, and that the tumor itself is not interfered with.

In most cases colostomy is alone possible, and transverse colostomy will have to be performed in order to get well above the diseased area.

Patients, not unnaturally, object to the performance of colostomy, but I would strongly urge that in view of the very serious septic complications which tend to occur, operation should be performed early, and that we should not wait until it becomes urgent.

The result of colostomy in these cases are extraordinarily satisfactory. If the disease has not progressed too far before operation, it becomes completely arrested and the patient regains normal health.

The inflammatory mischief becomes quiescent, and ceases to cause any trouble or produce any symptoms.

When feasible, enteroanastomosis, ileoproctostomy or ileosigmoidostomy or intestinal exclusion is substituted for colostomy to relieve obstruction and procure daily soft evacuation without the nuisance of having feces discharged through the side.

Appendicostomy or cecostomy are useful adjuncts in the surgical treatment of chronic diverticulitis, since they provide for through and through colonic irrigation, which heals inflamed and ulcerated areas, frees the bowel of irritants, and facilitates convalescence from autointoxication.

The author's references will appear in his reprints.

Acute Myeloid Leucemia*

Report of a Case

MARK GORDON, M.D.
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CASE.—A. W., schoolgirl, aged fifteen years, born United States. Chief complaint, precordial pain, shortness of breath, cough, persistent vomiting. Family history negative. Patient had measles and German measles in early childhood. Always suffered from gastrointestinal disturbance, constipation, periodical headaches and vomiting. Menses set in at thirteen years, regular of three days' duration. Last menstruation June 3, 1923.

Patient, a resident of Baltimore, came to Brooklyn on a visit on June 3, 1923. Immediately after her arrival she began to complain of frontal headaches, nausea and vomiting. There was no fever. The patient walked about for a week in this condition, then she began to feel hot, lost her appetite, with general weakness, headache and nausea. The vomiting became more intense. Patient took to bed. There were no abdominal pains nor skin eruption. This condition lasted from June 12th until July 7th. Patient was attended by various physicians for different conditions, among them typhoid fever, pneumonia, influenza and nephritis. No blood count had been made before her admission to the hospital. July 7th she became worse, suffering from intense palpitation, severe precordial pain, dyspnea, cough and incessant vomiting. She was admitted to the hospital July 10th.

On admission the patient looked acutely ill, markedly dyspneic, anemic, no cyanosis, with a peculiar pasty look suggesting nephritis. Temperature 103°, pulse 120, respiration 22. Pupils contracted, reacting sluggishly to light. Ears and nose negative. Teeth in good condition. Tongue flabby, coated, white, furry, moist. Tonsils imbedded and ragged, congested. No lymph glands palpable about the neck, no enlargement of thyroid. Some retraction of the head was evident. Chest presented diminished expansion on inspection with increased vocal fremitus on palpation. Percussion revealed a dull note on both sides. Auscultation elicited some harsh breathing over both lungs and râles here and there, more so in the regions of the axillæ, giving the impression of pulmonary congestion. Heart, diffuse impulse over precordia. Apex in sixth interspace to the left of the nipple line. Area of cardiac dullness increased to left. There was a systolic thrill at apex. Auscultation revealed a mitral systolic murmur at apex, transmitted to the axilla to the left, a diastolic murmur at the apex which was circumscribed. There was accentuation of the second pulmonic. Abdomen, liver palpable four fingers below costal arch, spleen palpable. There was abdominal distention but no fluid could be made out, although there was dullness in the flanks. No masses could be made out. The extremities presented some edema at ankles. Patellar reflexes exaggerated. Positive Babinsky and ankle clonus. No Kernig. A provisional diagnosis of malignant endocarditis with cerebrospinal meningitis was made.

The urine was cloudy, specific gravity 1010, acid, no albumin, no sugar. Microscopically negative. Blood culture negative. Hemoglobin 52 per cent. Blood count showed a leucocytosis of 320,000. The differential was 54 polymorphonuclears, 34 lymphocytes, 12 myelocytes. Three counts were made and the blood picture presented respectively 320,000, 360,000 and 280,000 leucocytes. Myelocytes were from 7 to 12. Fifteen c. c. of spinal fluid was obtained under moderate pressure. Examination showed albumin and a slightly positive Noguchi. Differential count showed thirty-four polymorphonuclears, sixty-four small lymphocytes and four large lymphocytes. There were no bacteria. The diagnosis of acute myeloid leucemia was made.

The disease ran an extremely stormy course. The temperature was 104° and dropped toward the end, which came on the night of July 12, 1923, when the patient died. The case is of interest first, because it brings out the importance of a blood count in every case, particularly in cases of a baffling nature. The second point is its comparative rarity. Cabot speaks of this disease as fully five times as rare as pernicious anemia and about as rare as myxedema. It is more common in males than in females. The disease occurs more often between the thirtieth and fiftieth year. After the sixtieth year it is almost unknown. Before the twentieth year it is extremely uncommon. It is of some interest that when the disease occurs before the twentieth year the female sex predominates.

Gorham in the *Albany Medical Annals* of 1917, speaking of the etiology of this disease, says, "The condition is a fatal disease, of unknown etiology characterized clinically by a short course."

The first case of acute leucemia was described by Von Friedrich in 1857. The patient died two months after the onset of the disease. Epstein in 1889 describes a clinical picture and H. Fraenkel in 1895 called special attention to the pathological changes in the blood. The contributions to the literature on this subject have been voluminous. Many writers maintain that there is no such disease as myeloid leucemia, that all these conditions are lymphemias. The diagnosis of myeloid leucemia, while based largely on the tremendous increase in the number of leucocytes, does not, however, confine itself solely to the quantitive changes in the blood. There are certain periods of remissions when a diagnosis is made on the qualitative changes in the blood. Although all varieties of cells are increased, the most conspicuous cell of all, in these conditions, is the myelocyte. In myeloid leucemia this cell constitutes twenty per cent. Da Costa reports cases in which the myelocytes constituted seven per cent of the cells. In this case there were from seven to twelve per cent. The myelocyte rarely appears in normal blood.

249 NEW YORK AVENUE.

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Instruments, Apparatus, and Clinical Notes

A New Instrument for the Use of Heliotherapy in Tuberculosis and Other Affections

J. W. KIME, M.D.

Fort Dodge, Iowa.

As one of the first workers in the field of heliotherapy in tuberculosis, and first of those making use of the condensed rays of sunlight in this disease, I want to refer briefly to the literature of this subject.

Finsen, of Copenhagen, had in the late 90's made use of condensed sun rays in the treatment of lupus. In 1898, I first called attention to the subject of condensed sun rays in the treatment of pulmonary tuberculosis. In the *Journal A. M. A.* for May 12, 1900, and in the NEW YORK MEDICAL JOURNAL for October 13, 1900, and November 1, 1902, I discussed heliotherapy and showed the large sun reflector used for the concentration of sunlight upon the chest in pulmonary tuberculosis and upon the open wounds of surgical tuberculosis. I then published photographs which had been taken through the entire thickness of the thorax. (I know of no other such published photographs.) Reports of cases successfully treated were then, and subsequently, reported.

But the method was new and it has taken many years of patient work to demonstrate the value of a stronger sunlight in this disease. That conservatism which characterizes the medical profession made it necessary to proceed along fixed lines, taking years of time and many types of patients, before the claims of this new form of therapy might be stressed. In consequence, I now find that much of this early work, done more than a quarter of a century ago, has been forgotten while others are now rediscovering, as "original" the things which then were published in these, and other, widely circulated publications.

During these years I have seen light, and especially sunlight, take first rank in the treatment of tuberculosis in all its forms. It is therefore a real pleasure to find these words published by Dr. Samuel H. Watson, of Tucson, Arizona, in *Southwestern Medicine* for January, 1925.

"Following Finsen, current medical literature gives Bernhard of St. Moritz credit of first using sunlight in the treatment of infected wounds and socalled surgical tuberculosis, in 1902, and then Rollier of Leysen, in 1903. Malgat, of Nice, is credited with being the first to use it in pulmonary tuberculosis, in 1904.

"Without wishing to detract from the credit due any of these men, and credit is certainly due all of them, but desiring to see the sequence of events in the history of heliotherapy set forth as they actually occurred, I wish here to record the fact which, apparently, is not known to any of the writers, either native or foreign, who have written on heliotherapy, that the real pioneer, after Finsen, in heliotherapy, for surgical, as well as pulmonary tuberculosis, was an American doctor, living and practising in Fort Dodge, Iowa, Dr. J. W. Kime, by name. Stimulated by Finsen's work on lupus, Dr. Kime was himself treating that disease with the sun in 1897 or 1898. He obtained excellent results, and reasoning that if sunlight was of value in skin tuberculosis, it ought to be valuable in other kinds, he began, in 1900, treating tuberculosis of the lymph glands and lungs. His interest was so intense that he did some research work on the penetration of light rays, and this part of his work has been acknowledged in literature. He also invented a large mirror made of blue glass, which cut out a large part of the heat rays and concentrated the blues and violets. His work so closely following Finsen, who assumed that all the valuable part of the spectrum was at the violet end (we think differently now), it was most reasonable that he should work along this line. Dr. Kime used his mirror to concentrate the rays on the part affected and, in addition, exposed the patient's body to the direct rays of the sun."

John H. Pryor in his article in Billings-Forchheimer's recent work on *Therapeusis of Internal Diseases,* volume 2, makes frequent references to our original work in light therapy. Pottenger, of California, in his *Clinical Tuberculosis,* volume 2, also gives full credit to this work.

So much for the early history and for a stronger and more powerful sunlight in the treatment of tuberculosis.

Sunlight is now everywhere recognized as the very first of all therapeutic remedies for tuberculosis. All writers upon heliotherapy agree that the sun's rays are infinitely to be preferred to those from any artificial source. All other lights are but feeble imitations of sunlight. Upon this point Pryor says, "A great deal has been written about artificial means of light therapy. At best they are but poor substitutes for the sun's energy." Rollier says, "Science has not yet invented an adequate substitute for sunlight."

With these statements we fully agree. We might as well expect a vigorous growth of plant life under the glow of artificial light as to expect any vigorous effect of any kind from such a light. The most that can be said in favor of any artificial light in the treatment of disease is that it is better than no light at all.

Pryor says: "Sunlight was extensively used in the earliest days of medicine. The Egyptians, Persians, Romans and Greeks put it into practical use. It was extensively used by Herodotus and Hippocrates but later fell into disuse until about 1800, and little was done with it until about 1900 when Finsen, Kime, Rollier and others took up the work in a practical way."

Light kills bacteria and concentrated light inhibits the growth of bacteria even in the deep structures of the body. Finsen found that concentrated sunlight killed bacteria fifteen times more rapidly than ordinary sunlight. The bactericidal action of the deep penetrating rays of sunlight is effected by their inflammatory reaction causing increased exudation of serum and the migration of leucocytes, promoting phagocytosis.

FIG. 1.—Reflector of highly polished metal

Upon the skin, sunlight produces an acute erythema with dilatation of the blood and lymph vessels and the exudation of serum and leucocytes. Those who tan best, in whom pigmentation is most marked, most promptly recover.

Upon the circulatory system the effect of the light is marked. The capillaries dilate and we have even found that in open wounds they frequently rupture and blood oozes out upon the surfaces. The violet rays are tonic in their effect, they are soothing to the nervous system, and the temperature declines.

Sunlight is toxic to bacteria and particularly to the tubercle bacillus. Pryor states "that light penetrates the entire thickness of the thorax as shown by Kime, Finsen, Malgat and Kaiser." Pryor also reproduced their work. He concludes that sunlight also penetrates the body to a depth of ten inches, that concentration favors its penetration and that pigmentation favors the absorption of the ultraviolet rays.

He says, "The effects of solar radiation on the general condition of the patient are gratifying to patient and physician alike, the haggard and spiritless appearance giving way to one of cheerfulness and animation. There is a rapid alleviation of pain and usually within two weeks complete disappearance (in joint and bone tuberculosis). Temperature gradually comes down to normal; appetite returns; weight and strength are taken on rapidly and the blood condition improves. Both hemoglobin and red cells increase, leucocytosis becomes reduced and an actual lymphocytosis takes place.

"It has been clearly proved that solar radiations can be successfully applied not only in tuberculosis, but in cases of anemia, rickets, osteomyelitis and nonhealing wounds and in convalescents from wasting and infectious diseases. It cannot be too firmly asserted that heliotherapy, in prevention and curative medicine, must be accepted as one of the most effective agents at the command of the modern therapist and clinician.

"Its specific value in tuberculosis, rickets and the upbuilding of resistance and general physical condition, is known."

We have found in our own work that not only in pulmonary tuberculosis but in bone, joint and glandular tuberculosis, heliotherapy is of the greatest value. In nonhealing wounds repair at once takes place. In lupus it is specific.

A NEW INSTRUMENT

With all the apparatus that has been used in the past for the purpose of concentrating sunlight and removing heat rays, it has been necessary to make use of glass. We have known all the time that the glass cut out the very rays that it was most desirable to use, the ultraviolet rays.

We have just now been able to overcome this difficulty by entirely doing away with glass and making use of highly polished metal reflectors for the concentration of the sunlight, after which it is passed through violet colored screens of celluloid. This permits the passage of the ultraviolet rays.

In this manner the ideal sunlight has been evolved—a powerfully condensed light which uses all the ultraviolet rays, with the elimination of the heat rays—a light exceedingly rich in the short waves, and yet a cold light.

This condenser is five feet in diameter and utilizes all the shorter rays of sunlight—the violet and ultraviolet rays. This apparatus is the most powerful sun therapeutic light in existence and it utilizes those rays which have been demonstrated by all observers to be most efficient in this field of therapy.

METHOD OF USING THE LIGHT

In pulmonary tuberculosis the condensed violet and shorter rays are thrown upon the bare chest of the patient for twenty minutes daily, after he has gradually become accustomed to their use. In addition, the patient is placed upon a cot in the open sunshine with nothing on but gossamer clothing, or no clothing at all, for a period of three hours daily. These applications of sunlight are begun very gradually after the manner of Rollier.

In glandular, joint and surgical tuberculosis the condensed violet rays are turned directly upon the parts affected and into the open wounds of surgical tuberculosis. Response to the treatment in such cases is prompt and effective.

We feel that this form of treatment has been too long neglected and that the use of sunlight, and of the strongly condensed violet and ultraviolet rays, should always be applied to that class of cases to which they are adapted.

The Treatment of Laryngeal Tuberculosis with the Goerz-Wessely Lamp

A Personal Observation and Opinion.

JOSEPH W. MILLER, M.D.

New York

During my sojourn in Vienna I was introduced to a novel method for the treatment of laryngeal tuberculosis. This treatment consists in the application of concentrated artificial light to the upper respiratory passages either directly by means of the Seiffert universal larnygoscope with chest support, or indirectly, by means of the laryngeal mirror.

Heliotherapy for tuberculosis in general and laryngeal tuberculosis in particular is not new.

The healing power of the sun was surely known to ancient civilization but was lost to us during the passing of the ages. It was rejuvenated about thirty years ago when Poncet began to use sunlight in the treatment of tuberculosis. His work made no impression and remained unnoticed. Rollier and Bernhard made extensive investigations and found encouraging results showing that sunlight has an elective therapeutic effect upon all forms of tuberculosis.

Finsen, who did a great deal of work on heliotherapy, found in the carbon arclight an excellent substitute for sunlight which was especially effective in lupus.

But Sorgo was the first to treat tuberculous lesions of the larynx with reflected sunlight and could demonstrate a number of successfully treated cases twenty years ago.

On the other hand, Brünings and Albrecht in experimenting on laryngeal tuberculosis of the rabbit with sunlight and mercury vapor light found after a careful critical study only negative results. Similarly, Blumenthal, who too used sunlight and mercury vapor light on the diseased human larynx by means of laryngofissure, met with the same results.

Notwithstanding the discouraging findings of Brünings, Albrecht and Blumenthal, Wessely of Vienna was inspired with the triumphant Finsen treatment of lupus and skin tuberculosis and especially with the good results obtained with reflected sunlight in many cases of human tuberculosis by Sorgo.

Therefore, in order to investigate critically the value of artificial sunlight in the treatment of tuberculosis of the upper air passages, Wessely began to experiment with that form of light in 1920. He used this method of treatment to the exclusion of all other local or general therapeutic agents.

His experiments and results are the answer to the following questions:—1. "Is local heliotherapy for tuberculosis of the upper air passages in itself of value or not?" 2. "If so, is it possible to construct a method for local heliotherapy which should lend itself for the use of the many." In order to answer these questions, it is necessary to decide what we know definitely about sunlight and its local action upon normal and tuberculously diseased tissue."

Sunlight is not homogeneous light, nor are its rays uniform; instead it is a mixture of rays of different wave lengths which by means of prisms can be reduced according to its respective spectrum.

"The rays appear then, according to their wave lengths, as a colored band arranged in the spectrum. The colors are: Ultrared, red, yellow, green, blue, violet and ultraviolet. It is important to know that rays of different wave lengths act differently upon the skin of the human body.

"Sunlight produces, after prolonged suitable exposure, an immediate hyperemia on the skin as a result of the heat action. This heat action is contributed by the rays of the red end of the spectrum and is, for our purposes, not desired. On the other hand, there appears after a certain latent period, an erythema, which displays a photochemical action of the blue and ultraviolet part of the spectrum. This erythema goes through a characteristic metamorphosis; there appears pigmentation and desquamation.

"The sun's rays can penetrate human tissues and bring about in its depth tissue changes. The power of penetration by the rays of different wave length are not equal. While the heat rays have a considerable power of penetration of a few centimetres, the values for the visible spectrum quickly diminish and amount to in the ultraviolet only fractions of a millimetre; so that even the superficial layer of the epidermis is not pierced. But this in turn effects a fluorescence with the formation of beta rays which penetrate deeper and bring about a chemical reaction in the tissue. This biological effect is proportional to the chemical power and inversely proportional to the capacity of penetration.

"It is known that sunlight has a selective and destructive action upon tuberculous granulation tissue and that this action is mainly due to the influence of the blue end of the spectrum, namely, the ultraviolet.

"Simultaneous with the action it exerts upon tuberculous granulation tissue, the light acts as a powerful stimulant to connective tissue formation; thus forming cicatrization. Besides the local action of the light upon the skin, it exerts a general influence upon respiration, pulse, blood, etc."

The following requirements are necessary for the artificial light to be of value: It must be a chemically active, cool light of a suitable photochemical intensity. It must be so concentrated as to reduce the time of exposure to a minimum and at the same time create an optimal therapeutic effect.

It is needless to state that with any light the action of which would be so weak as to consume an

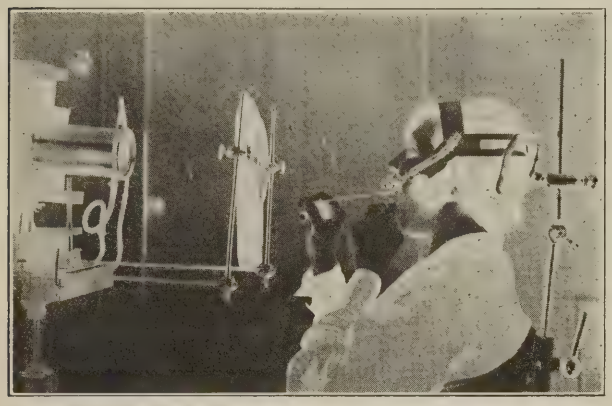

FIG. 1.—Patient looking at her own larynx. Indirect method of irradiation. Patient sits in front of a perforated magnifying mirror and with the laryngeal mirror suspended she can regulate the ray of light directly upon a given lesion.

hour or more for each individual case, it would be impossible to manage such great numbers as are seen to come for treatment at the Hajek clinic. Besides, too prolonged exposure would exhaust the patient and waste valuable time for both physician and patient.

Since it is known empirically and theoretically that the maximum amount of light energy causing erythema and pigmentation is due to the rays having a wave length of 300 mm. and that these rays are located at the outer or blue end of the spectrum, i. e., the ultraviolet end, Wessely began to experiment with these rays to the exclusion of all others.

To imitate the blue end of the sun spectrum was the first aim, the employment of a tremendous light energy was the second, and an apparatus which should allow the light energy to strike unaltered at a desired spot was the third.

The carbon arclight yields rays closely imitating sunlight but the ordinary arclight in itself is not the best imitation of sunlight. But with the addition of a certain substance—metallic salt—to the carbon bars, the blue end of the spectrum becomes complete. (Such impregnated carbon bars are now manufactured by the optical concern C. P. Goertz Co. of Vienna.) By utilizing these special carbons, the arclight produces rays having a wave length of 290 mm. embracing the entire ultraviolet of high altitude sun at zenith.

In order to destroy tuberculous tissue, i. e., to bring about its degeneration, only powerful and concentrated light is necessary. By a special designed Goerz system the superficial brightness is doubled, which also shortens the time of exposure to irradiation.

Briefly, the Wessely lamp is an arclight which burns with specially constructed and impregnated carbon bars according to the Goerz system, by which the greatest concentration of rays is thrown to one side and made to converge into a cone through the medium of a quartz optic. The heat rays are absorbed by a water jacket connected with the quartz optic. In other words, this machine is a carbon arclight, watercooled, quartz lamp.

With this lamp only one patient at a time can be treated. The average time of exposure is eight minutes, given at first every other day and later at longer intervals. About twenty patients are treated during the forenoon. Those in good general condition, or otherwise are favorable subjects, are irradiated directly by means of the Seiffert universal direct laryngoscope with chest support. Patients so treated have the benefit of the ultraviolet rays striking the lesion directly, shortening the period of treatment considerably. Frail individuals or those with advanced pulmonary lesions or those intolerant and too sensitive for the direct method, are treated indirectly in the sitting posture by means of an all metal laryngeal mirror which is held suspended by a special contrivance attached to the teeth. These steel mirrors are utilized because they reflect at least forty-four per cent. of the valuable therapeutic rays into the larynx; while the ordinary glass mirrors absorb these rays, reflecting only about nine per cent. It goes without saying that this method is not as good as the direct method, although more comfortable. The patient sits in front of a large mirror which is centrally perforated like a head mirror and can see his own larynx. In this manner he is able to regulate the laryngeal mirror himself whenever the rays do not strike a desired area. Cocaine hydrochloride ten per cent. to which a few drops of adrenalin chloride are added is used to swab once or twice the soft palate, root of tongue, posterior pharynx wall and the interior of the larynx whether the direct or indirect methods are used.

The period of treatment varies from a few weeks to one and one half years. At the end of treatment, the patients are advised to call once a month for observation. Through the courtesy and kindness of Professor Hajek and Dr. Wessely I was given

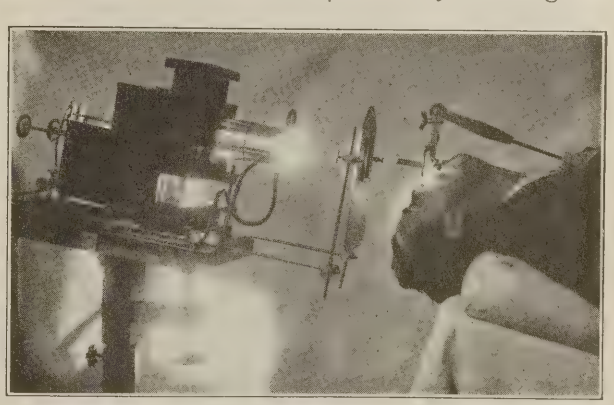

FIG. 2.—Direct method of irradiation. Patient suspended by means of the Seiffert direct universal laryngoscope, rays striking the lesion directly.

free access to the phototherapy department and the privilege to examine patients at random. Superficial tuberculous ulcers heal under this form of treatment rapidly leaving at first a small depression which soon fills out to an even surface. Granulations become smaller and shallower and one can distinctly differentiate the irradiated area from the non irradiated one. Only the irradiated ulcer heals.

Those neighboring in juxtaposition and not exposed to the rays are not so influenced. Massive infiltrations of the posterior larynx wall under the influence of the rays change their shape and become smaller. Finally, there remains a pale transverse elevation which on phonation is thrown into several folds.

Dysphagia, when due to superficial ulcerations, disappears in many cases, following only two or three exposures; when no change even in the appearance of the lesion is yet noticeable. Of course, there are cases with extensive tuberculous destruction of the upper air passages—destruction beyond repair—where the light treatment gives no analgesia nor any other favorable symptomatic results. These are patients with fulminating tuberculous lesions of the lung whose resistance has sunk so low that nothing can stimulate their recuperative powers to tissue repair. Recurrences on the same or other parts of the upper air passages are not uncommon while there is an active lesion in the lung.

At any rate, this form of treatment gives results which have hitherto not been attained by any other form of treatment. The patient becomes more cheerful and his confidence in the hope of getting well is strengthened. The ability to swallow food and drink comfortably gives these unfortunate persons a chance to fight their primary pulmonary affection.

Ambulatory and afebrile patients and those with no progressive lesions are best suited for light treatment. Before treatment is begun the patient's condition is determined carefully. A thorough chest examination both physical and röntgenological is made and the blood examined to determine the relative rapidity of the sinking of the erythrocytes.

Dr. Wessely told me that he observed in several cases the pathological condition of the larynx clear up entirely under treatment, while the patient's pulmonary affection either remained the same, or else became progressively worse; thus having no influence at all on the pulmonary condition.

Without becoming at all overenthusiastic, it is my profound belief as it is the belief of those who had an opportunity to study with Dr. Wessely, that this form of treatment heals, if not actually cures, laryngeal tuberculosis.

These encouraging results achieved by Wessely in Vienna prompted me to import this lamp to the States. Great difficulty was encountered in obtaining the first few cases; as most of these unfortunates are confined to various hospitals and sanatoria. While some of the hospitals offered me the opportunity to treat such cases with the irradiation lamp, it was under condition that I bring the lamp to the respective institutions. This I found impossible, due to the fact that the lamp is massive, unportable and needs a specially constructed rheostat.

Notwithstanding these difficulties, I succeeded in getting three ambulatory cases of laryngeal tuberculosis up to November 23, 1925. Two of these cases are of the advanced type and reveal extensive infiltration of the aryepiglottic folds, ventricular bands, interarytenoid space and almost complete destruction of both cords. One of these has in addition marked tumefaction of the epiglottis and ulceration of the interarytenoid space. The third patient shows extensive swelling of the right aryfold, interarytenoid space and right ventricular band so much so that the right cord is not at all visible. The left side of the larynx is only slightly involved.

The condition of all of these patients was diagnosed tuberculous cases; as all of them have pulmonary tuberculosis, all had frequent positive sputum examinations and were confined for various periods in hospitals and sanatoria devoted to the treatment of tuberculosis.

It is too early, as yet, to give a detailed report on the outcome of these cases, as the first patient was under my care for only three weeks at the time this paper was written. A full report on the results obtained with this mode of treatment will follow in a later communication. Suffice it to state that the first two patients treated have improved considerably. Their pain and laryngeal irritation have subsided entirely and it is their enthusiasm and satisfaction, more than what I have seen in Vienna, which prompted me to write this paper.

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268 East Broadway.

Cholecystography in Its Application to the Diagnosis of Cholecystic Disease.—More than eleven hundred patients were examined at the Mayo Clinic by cholecystography. The sodium salt of tetrabromphenolphthalein and that of tetraiodophenolphthalein were used, and each salt was administered orally and intravenously. In a comparison of the methods, Russell D. Carman (*Lancet,* July 11, 1925) states that the intravenous administration of the dye offers advantage in superior control of the patient, certainty that the specified dose of the drug has been given, and emphasis of the shadow obtained. Its disadvantages are the requirement of a punctilious technic and the hazard of local or systemic reactions. With identical technics the bromine salt given intravenously seems to be more provocative of systemic reactions than the iodine salt, if the latter is pure.

Simplicity and freedom from grave reactions are the principal advantages of oral administration. With either salt, nausea and purgation ensue occasionally. The iodine combination, even when pure, seems to produce these discomforts more often than the bromine. Vomiting after taking either drug, unless early, has apparently had no material effect on the shadow.

Dye in the intestinal contents produces shadows which may be a little confusing and might possibly conceal the shadow of the gallbladder, but such circumstances are infrequent. Lack of certainty that all of the drug has been taken as directed is another minor objection. The question may also arise as to whether defective absorption from the intestine may not be the cause of abnormal findings. However, all these objections and doubts seem to have little basis, for in this series the diagnostic results from all methods were about equal.

From these considerations it will be apparent that the author's present preference is for the oral use of the bromine salt as a routine and the iodine intravenously to check doubtful cases.

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Affections of the Respiratory System in Relation to Joint Tuberculosis*

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New York

PRIMARY FOCUS OF INFECTION IN JOINT TUBERCULOSIS

It is the consensus of opinion of practically all observers that joint and bone tuberculosis is caused by a focus located elsewhere in the body and only through one cause or another finds the vicinity of the joint the proper medium for invasion and development.

MacCallum, in discussing tuberculosis of bones and joints, agrees with that dictum in the following statement: "In all instances except in those in which the skeletal structures are encroached upon by tuberculous processes arising in adjacent tissues the bacilli must be brought to them by the blood stream, and it is practically certain that such bacilli come from some primary lesion which may be so small as to be overlooked or may be healed when the osseous lesions have developed." (1.)

Jones and Lovett in discussing prophylaxis in bone tuberculosis in children remark that, "no question is more important in connection with bone tuberculosis in children than a consideration of how it may be prevented or minimized. It must be remembered in this connection, the authors continue, that bone tuberculosis in the joints is regarded as a secondary manifestation, and generally secondary to infection of the lymphatic glands of the abdomen and mediastinum." (2.)

AGE AT WHICH JOINT TUBERCULOSIS IS MOST PREVALENT

Though one must bear in mind that adults are not immune to tuberculous involvement of joints, and that even old age is not a barrier to the infection, the first decade of life seems to be the most susceptible age for the invasion of tuberculosis in joints, and bones in the vicinity of the joints. Thus, of 1,259 cases of Pott's disease of the spine reported by Whitman, 1,075 or eighty-five per cent. of the patients were in the first decade; fifty per cent. were from three to five years, inclusive, at the inception of the disease.

In one thousand cases of hip tuberculosis 87.2 per cent. were in the first decade, and 45.2 per cent. were from three to five years of age, inclusive.

In one thousand cases of knee joint tuberculosis, reported by the same author, seventy-five per cent. were in the first decade, and forty per cent. were from three to five years, inclusive. (3.)

Alfer's table of statistics, from Trendelenburg's clinic at Bonn, show the relative frequency of tuberculosis at the different ages as follows:

Of a total of 966 cases including diseases of the region of the vertebræ, hip, knee, ankle, shoulder, elbow and wrist, the ages of the patients were as follows:

0— 5	=	207	40—45	=	31
5—10	=	195	45—50	=	18
10—15	=	148	50—55	=	19
15—20	=	139	55—60	=	15
20—25	=	60	60—65	=	13
25—30	=	47	65—70	=	3
35—40	=	29			

It is also important to bear in mind that according to the present day teaching even tuberculosis which shows its full manifestations in later age owes its origin to childhood. Metcalf, in his book dealing with tuberculosis of the lymphatic system, puts it very clearly: "At the present time there is a strong tendency to believe that nearly all cases of tuberculosis have had their origin in early childhood. Proofs for this supposition are not lacking. The cutaneous tuberculin reaction, so rare during the first few months of life, increases in frequency with every year, to reach its height between the ages of ten and fifteen years." (4.)

It must, however, be clear in our minds that not all who react positively to tuberculin or von Pirquet tests are suffering from tuberculous disease. For even in children there must be a differentiation made between tuberculous infection and tuberculous disease.

"Taking into consideration," says Metcalf, "the large number of children who react positively to the tuberculin test, Morse's distinction between tuberculous infection and tuberculous disease seems rather well taken. He defines infection as the state of being infected, and disease as an alteration in the state of the body, or of some of its organs, interrupting or

*From University and Bellevue Clinic in collaboration with Dr. Reginald H. Sayre, Dr. Leon Theodore Le Wald, Dr. Arthur J. Huey, Dr. David H. Barash, and Dr. Philip Wettervik. Paper read before Riverside Medical Association of New York City, April 21, 1925.

disturbing the performance of the vital functions and causing symptoms of some sort. A comparatively small proportion of the children showing a positive von Pirquet test have tuberculous disease; they are, however, infected. It is the reaction of the tissues to the infection that constitutes the disease tuberculosis; also known as clinical tuberculosis."

LOCATION OF INFECTION OF TUBERCULOSIS IN CHILDREN

As we have stated before, tuberculous infection in childhood is responsible for the great majority of tuberculosis in all ages, it is therefore important that we attempt to elucidate the location of tuberculous infection in childhood.

"Postmortem findings," says Metcalf, "indicate that the most common site of tuberculous lesions in early infancy is in the bronchial and mesenteric glands. In early childhood the cervical glands run a close third. In Medin's series of 632 tuberculous infants under one year the localization was as follows:

In lungs only	78 cases
In bronchial glands	17 cases
In both lungs and bronchial glands without involvement of digestive tract	194 cases
In digestive and mesenteric glands	6 cases
In portal glands and liver only	1 case
In respiratory and digestive tract	313 cases
Location not given	7 cases

It is worth while to emphasize the salient points of Medin's statistics that, whereas mesenteric glands alone were involved in six cases only, the bronchial glands and the lungs were involved in 194 cases. On the other hand, in 313 cases both the respiratory and the mesenteric regions were involved.

The statistics of Wollstein and Bartlett of 178 autopsies on tuberculous children under five years of age are even more eloquent, thus:

In lungs	164
Bronchial glands	169
Mesenteric glands	139
Mesenteric glands alone without bronchial	9

THE TONSIL AS THE AVENUE OF INFECTION

Due to their situation any bacilli entering the mouth and being swallowed pass over the surface, and may thus find lodgment in the crypts of the tonsils. Mouth breathing caused by nasal obstruction or other causes will permit the dust to enter through the mouth, reaching the tonsils which act as the first line of defense.

Ravenel, in speaking of various avenues of infection as etiological factors in tuberculosis, says of the tonsils that, "they may be the seat of primary tuberculosis, and often show scars and other changes attributable to tuberculosis." Lathan, quoted by Ravenel, examined the tonsils of twenty-five children autopsied, ranging in age between three months and thirteen years, and he found seven cases whose tonsils were tuberculous. (5.)

Metcalf, in speaking of the frequency of tonsillar tuberculosis, calls attention to the fact that even in cases when no tuberculous symptoms are present examination of the tonsils reveals the presence of tuberculosis in from four to six per cent.

It is also worth while calling attention to another important statement made by the same author with reference to tonsillar affection, namely, that the small and buried sclerosed tonsils are often a greater menace than the tonsils of normal size. "The small sclerosed tonsil may increase the facility of infection, because of its crypts having wider openings on the buccal surface than normal; also because of atrophy of the lymphatic tissue."

In our series of cases studied at the University clinic, the examination of the tonsils in the forty cases treated for joint tuberculosis showed that thirty-two of the forty had tonsillar infection.[1] Five of the thirty-two patients had their tonsils removed prior to their coming to our clinic, and twenty-seven were still in possession of them. Some were of the sclerosed type of which Metcalf speaks, while others were of the hypertrophic type—distributed as to age as follows:

to 5 years	= 6	20 to 30 years	= 2
5 to 10 "	= 6	30 to 40 "	= 6
10 to 20 "	= 6	40 "	= 1

ASSOCIATION OF LUNG AND JOINT TUBERCULOSIS

Jacquemin in studying cases of tuberculosis of both lungs and joints, elaborates upon the prognostic importance of such combination. He discovered that the prognosis depended on which process began first, as the second process acts like a derivation or a fixation abcess, diverting the disease to this second point. When this second process occurs in the lung, these vital organs soon become compromised, but when the process of derivation is on a limb it does comparatively little harm, and this second process should be encouraged rather than suppressed. Hence the prognosis is comparatively favorable when the bone or joint process has developed secondarily to the pulmonary process.

The author also cites a number of instances of each type, and also cites some cases to show the disastrous results when a secondary bone or joint process was operated on and cured, thus, depriving the primary lung process of this outlet. On the other hand, benefit resulted when a primary bone or joint process was operated on and cured, the necessity for the lungs sacrificing itself thus being done away with. (6.)

MacKinnon has made a study of thirty cases of adults suffering from bone and joint tuberculosis, at the Galloway-Gibson clinic, and he comes to the conclusion that tuberculosis in adults is a general disease in which lesions of the lung are almost always present. He further remarks that bone and joint tuberculosis is not a frequent complication of pulmonary tuberculosis. A large percentage of adults suffering from bone and joint tuberculosis are definitely ill with pulmonary tuberculosis, or are in danger of becoming so, and this fact must be borne in mind in deciding upon the treatment of each patient. (7.)

The observation and conclusions of MacKinnon are contrary to the findings of all other observers who are in accord with the statement of Marsh that patients suffering from tuberculous disease of the joints are little liable to phthisis. (8).

Although in adults the complication is somewhat more frequent it does not warrant such sweeping assertion as that made by MacKinnon, that all adult cases of bone and joint tuberculosis have pulmonary involvement.

[1]Five specimens submitted to Dr. J. A. Fraser for examination showed the infection to be of a nontuberculous nature.

In my own series of forty-six cases of joint tuberculosis reported in this communication, forty of which underwent a painstaking physical examination from a medical and orthopedic point of view, as well as backed by a thorough röntgenological examination, the findings were as follows:

Number of cases of joint tuberculosis treated at University and Bellevue clinic during early part of 1925=forty-six. Male=22. Female=24.

19 months to 5 years	13	Male 7, Female 6
5 years to 10 years	11	Male 5, Female 6
10 years to 15 years	5	Male 4, Female 1
15 years to 20 years	5	Male 2, Female 3
20 years to 30 years	6	Male 2, Female 4
30 years to 45 years	6	Male 2, Female 4

	Parts Involved	
19 months to 5 years	Spine 6	Male 2, Female 4
	Hip 3	Male 3, Female 0
	Knee 4	Male 1, Female 3
5 years to 10 years	Spine 3	Male 2, Female 1
	Hip 3	Male 2, Female 1
	Knee 4	Male 1, Female 3
	Ankle 1	Male 0, Female 1
10 years to 15 years	Spine 3	Male 3, Female 0
	Hip 1	Male 1, Female 0
	Knee 1	Male 0, Female 1
15 years to 20 years	Spine 4	Male 1, Female 3
	Hip 1	Male 1, Female 0
20 years to 30 years	Spine 4	Male 2, Female 2
	Hip 2	Male 2, Female 0
30 years to 45 years	Spine 4	Male 2, Female 2
	Hip 1	Male 0, Female 1
	Sternum 1	Male 0, Female 1

In the entire series we had only four positive cases of pulmonary involvement.

Ages of those involved	
20 to 30	3
45	1
Total	4

Three of the four patients with the pulmonary involvement had the lung process prior to the joint involvement.

These above statistics show that pulmonary infection following bone and joint tuberculosis is small in number indeed.

On the other hand, it is interesting to observe that the x rays of the chests of the forty cases carefully studied showed the presence of enlarged mediastinal and parabronchial glands in twenty-seven cases. In some of the patients the glands in this region were so abundant and so conspicuous in size that one could not but feel that these glands played a very important part in the present condition of the involved joint and that, in determining the mode of treatment to be instituted the presence of these enlarged lymph nodes should not be lost sight of.

Even in the youngest cases of our series were those large bronchial glands present to such an extent that their existence could not be ignored.

It seems, therefore, reasonable to assume that the bronchial lymph glands found in such abundance in these cases are probably the source of supply of the systemic infection. Ordinarily the lymphatic glands, as pointed out by Metcalf, are better fitted to combat infection in childhood than in adults, because of the greater abundance of lymphoid cells and the lesser amount of fibrous tissue. The lymph glands form, on account of their capsules, organs which are entirely enclosed except for the afferent and efferent vessels. Toxin produced by retained bacteria will therefore not diffuse themselves so readily into surrounding tissues. The concentration of the toxin hinders the growth of the bacteria and causes a reaction of the tissues, coagulation necrosis resulting, which together with the stasis and thrombosis of the lymph and bloodvessels aids in the prevention of further disposal of the bacteria.

The presence of such necrosed bodies with filled emboli are a menace and an uncertainty and may at any time, provided the protective means usually at hand are somewhat diminished, cause a new breaking down of the lymph nodes, and thus, supply fuel for a fresh outbreak involving another joint, or causing at times a recrudescence of the already subdued old inflamed joint. (9.)

JOINT TUBERCULOSIS OF THE UPPER EXTREMITY IN RELATION TO GLANDULAR AFFECTIONS

It is the consensus of opinion of all observers that tuberculous involvement of the upper extremity is comparatively infrequent, and secondly, that whereas in joint tuberculosis involving the trunk and lower extremities the first decade of life is the age in which the involvement is most prevalent, and the ages between three and five yield the greatest number—in the upper extremity, on the other hand, especially in the shoulder region, the second decade together with the third yield the greatest number.

Thus, Alfer reports 966 cases of tuberculosis of joints from Trendelenberg's clinic at Bonn as follows:

239	vertebræ
241	hip
281	knee
43	ankle
28	shoulder
114	elbow
20	wrist

Of the Shoulder cases

Years		*Years*	
To 5	0	5-10	2
10-15	2	15-20	6
20-25	3	25-30	5
30-35	3	35-40	1
40-45	1	45-50	2
50-55	2	55-60	1
60-65	0	65-70	0

CITED BY WHITMAN (3)

Jones and Lovett in speaking of tuberculosis of the shoulder remark that the disease is uncommon in this location in childhood, and in both children and adults, tuberculosis of the upper extremity is much less common than that of the lower. To prove their contention they cite statistics of 7,474 cases of tuberculosis of spine and joints treated at the Boston Children's Hospital where only seventeen involvements of the shoulder joints were noted. (10.)

Whitman gives a summary of statistics of 3,561 cases of bone and joint tuberculosis of which

		Per Cent	
1432	or	40.2	trunk
2018	"	56.6	lower extremity
111	"	3.1	upper extremity

That the upper extremity, especially the shoulder joint, is exposed to trauma is a fact well known, and

FIG. 1.—Pott's disease, middorsal, of three years' duration, in a child of five. Note enlarged glands in pulmonary and cervical regions.

FIG. 2.—Involvement of eighth and ninth dorsal vertebræ with abscess formation in a patient thirty-two years old.

can not be given as a reason for the small number of involvements of that region. C. R. Scott, in his radiological analysis of 1,226 fractures as to locations found that, whereas the vertebræ represented 2.11 per cent., the humerus represented 4.89 per cent., the clavicle 3.26 per cent. and scapula 1.38 per cent. Hence the strain at or about the shoulder region resulting in fracture amounted to 9.53 per cent. (11.)

In this connection it is also interesting to observe that the shoulder joint as represented by the head of the humerus is more active and participates in the growth of the upper extremity to a greater extent than do the epiphyses of the lower part of the humerus and upper part of the radius and ulna—all the three constituting the elbow joint.

It is important to note, says Kirmisson, that the different epiphyses do not all possess the same physiological value. Of the two epiphyseal cartilages in the long bone, one always plays a much greater part than the other in the development of the length of the bone. This epiphysis is termed the fertile cartilage. The nature of these fertile cartilages varies in the superior and inferior extremities. In the upper extremity the fertile epiphyseal cartilages are the superior extremity of the humerus, and in the inferior extremities of the ulna and radius. In the lower limb, on the contrary, the epiphyseal cartilages of the lower end of the femur and of the upper end of the tibia cause increase in the length of the limb. (12.)

Jones and Lovett in giving the reasons for joint tuberculosis attacking children state that "One of the chief reasons that this (joint tuberculosis) occurs so frequently in early middle childhood is, that this is the active period of epiphyseal growth when the neighborhood of the epiphysis is largely supplied by blood."

We should, therefore, expect that the more active epiphyses would be the ones to suffer most frequently. Therefore, the small number of shoulder joint involvements become conspicuous by proving the exception to the general rule.

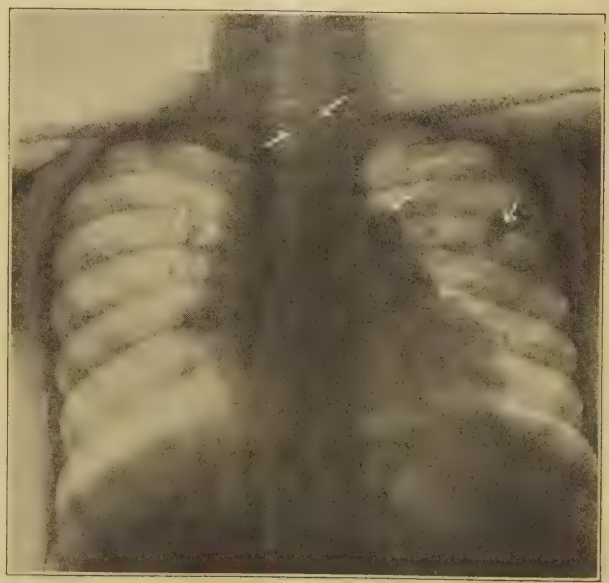

FIG. 3.—Pott's disease of cervical region in a child five years old. Note abundance of enlarged glands.

It is also interesting to bear in mind that in spinal tuberculosis the cervical region yields the smallest number, thus, of 1,355 cases of Pott's disease reported by Whitman as to region:

100	cervical
854	dorsal
317	lumbar

As a result of his statistical studies Whitman concludes that the dorso lumbar section of the spine is most often affected, while cervical disease is comparatively infrequent.

Tubby quotes Redard

who observed one hundred cases at the Dispensaire Furtado-Heine, giving the following statistics as to location: Six cervical, five cervicodorsal, sixty-two in the dorsal, five dorsolumbar, twenty in the lumbar, and two in the lumbosacral region. He further quotes Parker that out of 149 cases of Pott's only nine were in the region of the cervical. (13.)

Looking about for a reason for the small number of cervical Pott's disease and also the infrequency of shoulder tuberculosis, especially in early childhood, one can not help but wonder at the close connection between the above figures and the statistics of cervical adenitis and its age incidence.

Thus, Fischer, who has collected 1,484 cases of tuberculous cervical adenitis is quoted by Metcalf to have found as follows:

Age Years	*No. of cases*	*per cent*
1 - 5	59	3.97
6 - 10	120	8.08
11 - 15	233	15.7
16 - 20	469	31.6
21 - 25	282	19.
26 - 30	130	8.67
31 - 35	63	7.25
36 - 40	43	2.89
41 - 45	25	1.68
46 - 55	29	1.95
56 - 65	18	1.21

Metcalf, after citing his own 270 cases which practically bear out the findings of Fischer, concludes as follows: "These figures show that the frequency of cervical glandular tuberculosis is most marked in the second decade. This undoubtedly is dependent upon the concomitant frequency of decayed teeth and diseased tonsils during the same period.

"How intimate the relationship is between the tuberculous affections of the shoulder and cervical adenitis I am not in a position to say, but that there seems to be a peculiar coincidence in its statistical similarity (as well as in cervical tuberculosis) no one can gainsay.

"In concluding our preliminary report we feel justified in emphasizing that, in treating joint tuberculosis one is treating the result of a primary infection found elsewhere in the majority of cases. In order to eradicate the cause of the joint manifestation one must therefore try to ferret out the underlying primary causative factor. The tonsils and adenoids, if enlarged, must receive adequate therapeutic consideration. Enlarged lymph nodes should be dealt with by conservative methods, namely, by sunlight in the summer, and assisted by exposure to ultraviolet rays in the winter, the placing of the patient in a proper and healthy environment and proper diet.

"In view of the fact that so many of the patients afflicted with joint tuberculosis have large lymph nodes in their chest which latter may be a potential menace to the future wellbeing of the patient, especially so in the young, we would advocate the administration of properly filtered x rays to the chest, in order to cause a shrinkage of those enlarged bronchial and tracheal glands. Metcalf, in speaking of x ray therapy in glandular tuberculosis emphasizes its selective action. "The favorable influence of röntgen therapy in tuberculosis of the lymphatic glands is due largely to this selective action of the rays upon the lymphoid tissue of the glands, since the tissue is in a state of chronic inflammation and attended by proliferative changes. These cells are destroyed and replaced by fibrous tissue cells, as can be demonstrated by operation, or by miscroscopical examination. The lymphatic channels also become converted into fibrous tissue, thus eliminating the possibility of further spread of the disease and isolating it in the lymph nodes, where it is finally overcome.

"This destructive effect upon the lymphatic element, as well as upon all cells which have a marked faculty of proliferation, is the most pronounced action observed. The growth of connective tissue cells is stimulated and cicatrization follows."

Of course, it is self evident that such administration should, and must, be given by an expert who knows how to regulate the dose, the distance and the time of interval for exposure, and also how to measure the rays.

CONCLUSIONS

1. Bone and joint tuberculosis has its origin, in the majority of cases, elsewhere in the system. The latter acting as a primary focus supplying the fuel whenever the susceptibility of the articular region is present.

2. The presence of the abundant and enlarged lymph nodes in the chest, in the region of the pulmonary hilus, as well as in the mediastinal region, seems to bear out the contention of many observers that in this region the presence of the primary focus is most often found.

3. Röentgen examination of chest should always accompany the röntgenological examination of the joints in tuberculous affections of the latter region.

4. Therapeutic measures directed towards curing the diseased joints alone are only part of the treatment.

5. The method of therapeutic approach which aims at the eradication of the original focus of infection is the most plausible method to be pursued.

6. Radiation of the chest should be tried in those cases where enlarged lymph nodes in the chest are present accompanying the joint disease. Such procedure seems to be a valuable adjunct to the protective, as well as other therapeutic measures, which are ordinarily applied in caring for those afflicted with joint tuberculosis.

Especial appreciation is extended to Dr. Wm. J. Pulley, medical superintendent of the University clinic for his courteous cooperation, also to Miss Kate Keenly, clinical clerk of the Orthopedic Department.

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498 West End Avenue.

Acute Disseminated Bronchopneumonia Simulating Acute Miliary Tuberculosis*

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Acute disseminated bronchopneumonia is not commonly encountered in children. It is more frequently seen during the first two years of life, and is characterized by a widespread infection of the smaller bronchioles of both lungs.

The symptoms and physical signs resemble acute miliary tuberculosis so closely that even with the finer technic and modern means of diagnosis, one is apt to confuse the condition with the socalled galloping consumption and yield to an erroneous inference.

CASE REPORT

The case under our observation occurred in a boy nine and one half years.

The chief complaints were a harsh unproductive cough and irregular fever. Father, mother, one brother, one sister were all living and in good health. There was no history of tuberculosis in the immediate family.

Patient was a full term normal birth. Normal dentition. Breast feeding for one year, then mixed foods were given. Two attacks of measles, according to mother's statement, at ages of three months and three years respectively. Good recovery each time. Pertussis at eleven months with a complete recovery. No pneumonia. Tonsillectomy and adenoidectomy in 1921, prior to which time patient experienced frequent and repeated colds. Good recovery following operation.

The present illness began September 23, 1924, with continuous vomiting, irregular fever, chills, headache and a dry unproductive cough. The mother believed these were due to a beginning cold and put the child to bed. The following day the symptoms disappeared. The boy felt better and resumed his outdoor life. Nine days later projectile vomiting occurred after his breakfast. A dose of castor oil followed by free catharsis produced a feeling of well being. The next two days the child felt well. October 6th while playing, he experienced a severe frontal headache. Severe cough accompanied by sharp agonizing pain in the upper abdomen. Fever with rigors and chills were present. The patient refused food and marked constipation occurred. These symptoms increased in intensity with profuse perspiration over the entire body. Consciousness remained clear until thirteenth day of illness. At that time the symptoms and physical signs were most pronounced. Admission to the Jefferson Hospital followed on October 14th, exactly two weeks after the onset of the illness.

Physical signs.—Upon admission to the hospital the signs were identical with those seen at patient's home, except that they were more marked and intense than previously. Inspection revealed a well nourished boy fairly comfortable but dyspneic. Cyanosis was extreme. Head and eyes were negative. The cheeks were suffused and remarkably bluish. Lips were colored—almost blue. Tongue coated. Pharynx reddish, otherwise normal. There was slight pulsation in both carotids. Anterior cervical chain of lymph nodes on both sides were moderately enlarged.

Expansion of the lungs was about equal but limited on both sides. The respiratory movements were mostly abdominal.

Palpation confirmed inspection. There was no apparent increase in vocal frenitus.

Percussion revealed small areas of tympany and normal lung resonance irregularly scattered throughout the chest anteriorly and posteriorly.

On auscultation the breath sounds were harsh and loud of the bronchovesicular variety. Inspiration was louder and longer than expiration during the latter course of the disease. Râles both coarse and moist were present from the very start. The râles covered the entire pulmonary area and were heard both on inspiration and expiration. We were impressed with the widespread region which the infecton involved.

The heart action was very rapid. Heart sounds were of good character and quality until the thirteenth day of illness, when the heart showed evidence of falling behind in its work. At that time heroic treatment was freely employed.

The abdomen showed slight degrees of tenderness over the upper half. Liver enlarged two fingers' breadth below the right costal margin. Spleen was easily palpable. Extremities were negative. Kernig's sign was absent. The reflexes were slightly increased.

LABORATORY TESTS

1. *Blood.* Hemoglobin 85 per cent. — white blood cells 21,600, polymorphonuclears 79 per cent., small mononuclears 16 per cent., large mononuclears 3 per cent., eosinophiles none, transitionals 2 per cent., other cells none. White blood counts: Oct. 15th, 31,800; Oct. 17th, 20,400; Oct. 18th, 22,500.

2. *Sputum.* October 17th, gram positive, diplococci, micrococcus catarrhalis, staphylococcus, no tubercle bacilli found. October 18th-19th—No tubercle bacilli.

3. *Feces.* Color greenish brown—positive for blood, no parasites or ova, bile positive.

4. *Urine analysis.*—Four examinations, October 14th, 16th, 17th and 22nd, showed nothing abnormal.

5. *Blood* for Widal reactions October 18th—negative.

X ray examinations.—In presenting for your consideration the röntgenological aspect of certain phases of lung pathological changes, we would remind you that the röntgenologist's task is to interpret only that which he observes on the skiagraphs. We deal in variable densities and the shadows cast by normal, abnormal, or diseased tissues, are of vary-

*Read before the Philadelphia Pediatric Society, May 12, 1925.

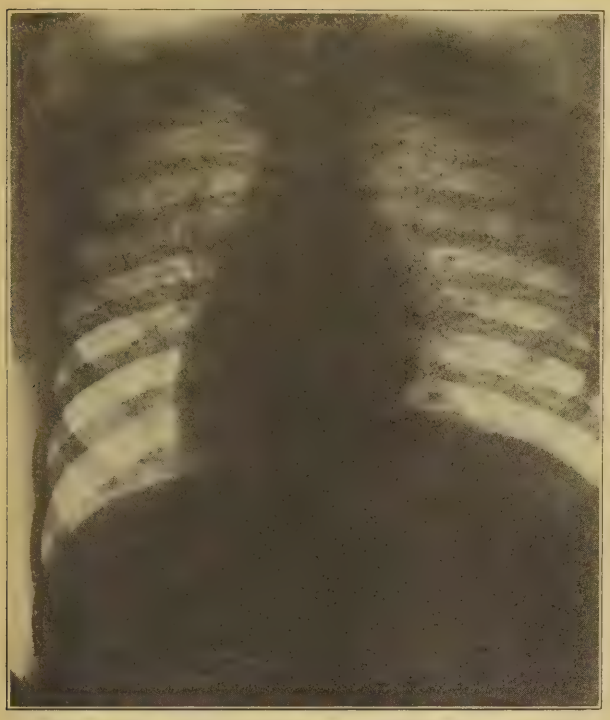

FIG. 1.—Case I. M. G. Disseminated bronchopneumonia.

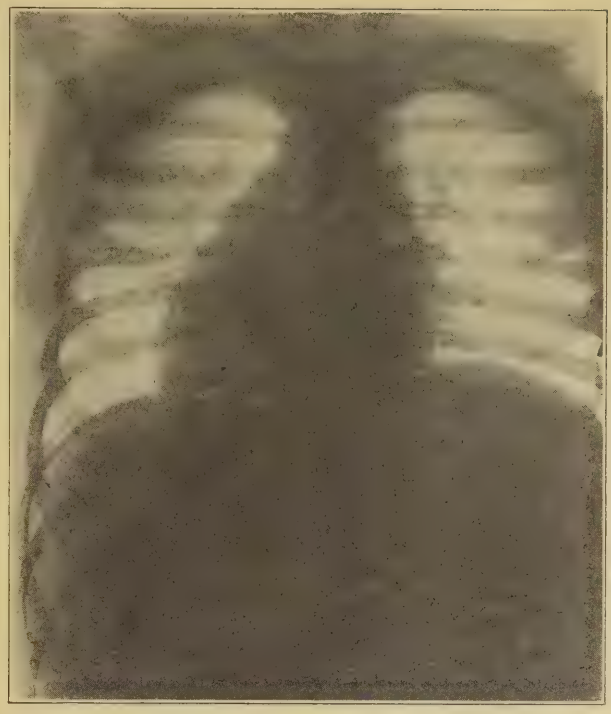

FIG. 3.—Case I. M. G. Showing the lungs fairly well cleared.

ing density. This interpretation must be made in pathological terms so as to correlate it with the clinical entity in so far as it is possible. In future years, there is no doubt that we will view the postmortem findings of lung diseases as more or less confirmatory evidence of röntgenological and surgical procedures.

But to reach this stage of perfection, the röntgenologist must be able to follow the course and progress of disease in any unusual process from its inception to its termination, either by death or recovery. It is hazardous often to solve a difficult problem in disease from a single study. Neither the surgeon nor clinician can always diagnose with any certainty as the result of one clinical examination.

Thus our problem resolves itself around a röntgen differential diagnosis in children between acute miliary tuberculosis and an acute disseminating pneumonia. To draw a finer distinction, one might say, between miliary bronchopneumonia and the hematogenous or lymphogenous miliary tuberculosis. At the present stage of our knowledge it would be rash to admit its feasibility with any surety.

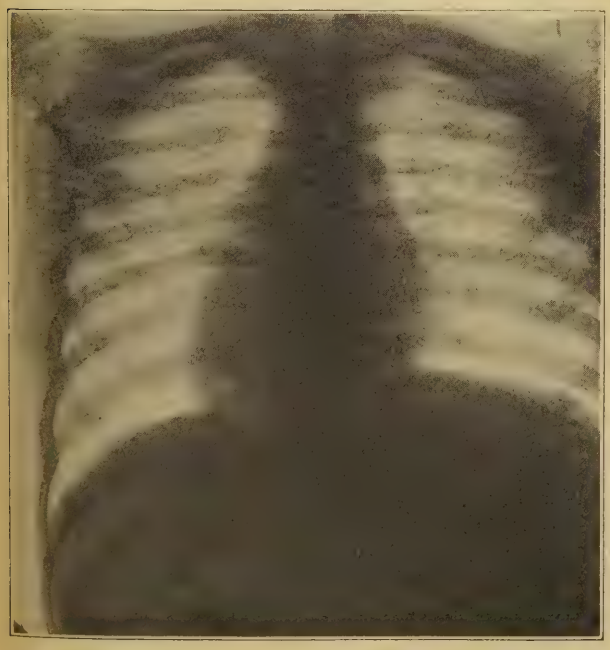

FIG. 2.—Case I. M. G. Showing the pneumonia resolving.

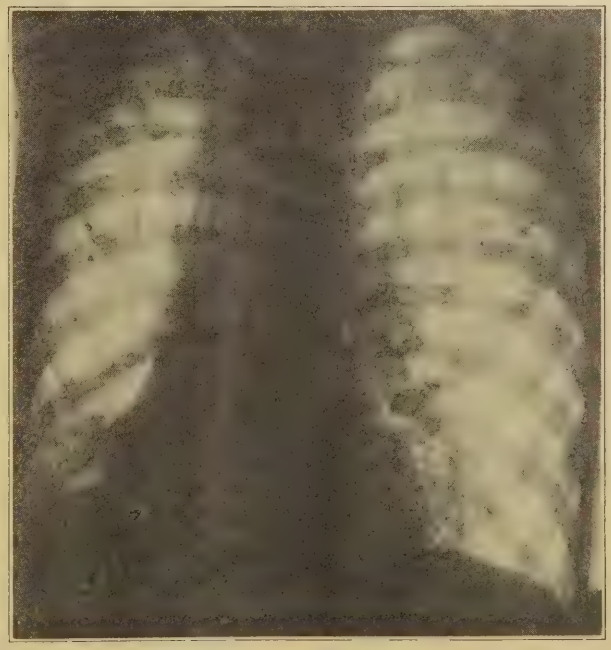

FIG. 4.—Case B. K. Mixed infection.

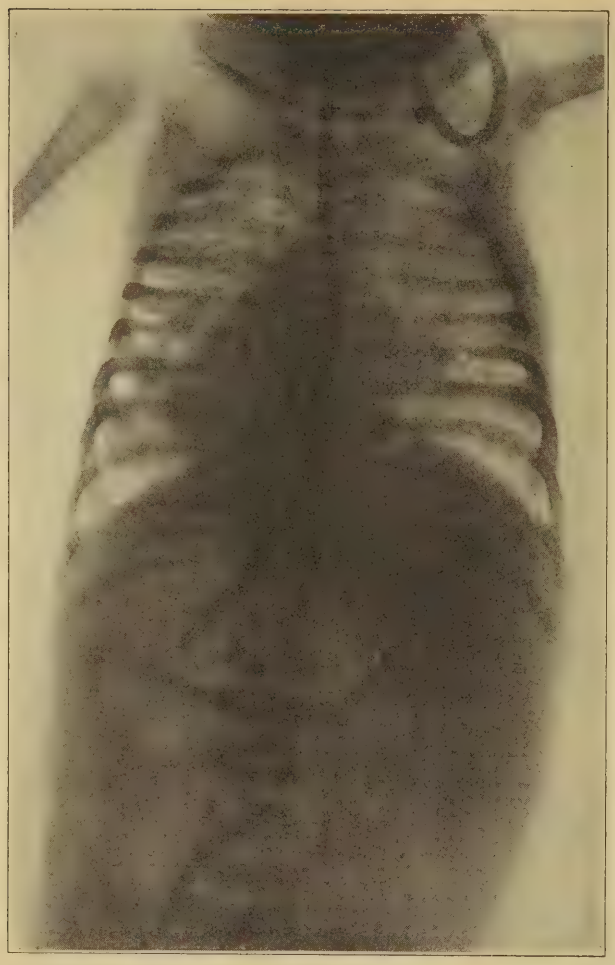

Fig. 5.—Case H. M. Tuberculous pneumonia.

Fig. 6.—Case H. G. Miliary tuberculosis.

It is conceivable, according to Jaches and others, that miliary tuberculosis may have a bronchial origin due to the transportation of tubercular secretions along the path of the bronchial tree and its subdivisions.

The röntgenogram therefore of the disseminated bronchopneumonia and the miliary tuberculosis of bronchial origin would be so strikingly similar that a differentiation must be based upon the clinical side of the case, in conjunction with the ray findings.

Investigations of Opi, Kuss, Gohn and others, confirmed more recently by Dunham, have demonstrated that the primary focus of pulmonary tuberculosis in children is in the lung parenchyma. We can demonstrate this focus röntgenologically, either in the living subject or in an artificially inflated lung secured after death. In early childhood, the apical fields are not the first attacked, and in the regional lymph nodes, the greatest reaction to infection occurs.

If one could radiograph an original focus of infection *per se,* one would observe first that one or more alveolar cells are less distinct as to air content but increased in density due to the serous exudate within them. This little pin point density increases in size as the cellular exudate occurs. The density continues to increase as caseation ensues or the soft tubercle is formed. Then the area contracts as fibrosis occurs, followed by calcification, at which stage we get the irregular calcified shadow cast by the healed tubercle.

A miliary tubercle can strictly be defined (Jaches) as a conglomeration of epithelioid cells visible to the naked eye. It is of pin head proportions, and for our purposes this evening we can consider it in the same class as soft (noncalcified) tubercles; in the acute stage, faint in outline.

When the entire lung fields, apex to base, in every lobule, are studded with these tubercles, we have true röntgenograms of acute miliary tuberculosis. The primary focus can not be detected. In fact there may be no true lung focus as it is often associated with a general miliary tuberculosis of other body organs. Each stud may be the shadow of numerous superimposed or coalescing tubercles. Caseation occurs rarely and these shadows maintain their haziness and faintness to the end, not increasing much in size.

Pure miliary tuberculosis of the lungs in children, we believe, is uncommon. It conforms more or less to the adult type, röntgenologically speaking.

The stud is denser, they are not as numerous. They may often be interstitial in location and not altogether alveolar. There may be a different development stage in different lung fields, some beginning to form and others advancing toward fibrosis and calcification. It is not this type that the disseminating bronchopneumonia simulates so closely.

In the case of disseminating bronchopneumonia reported here, only by the progressive clinical recovery were we enabled to reach the correct interpretive diagnosis—a miliary tubercle no matter what its origin, despite its location, automatically will cast a shadow similar at all times—and in picturing to you the röntgenogram of acute miliary tuberculosis, we have also drawn the picture

of the disseminating bronchopneumonia, unless there is one who dares to state that in one case the myriad tubercules are in the distant alveolar cells, while the myriads of other tubercules in the second instance are near the terminal bronchioles.

We purposely avoided describing bronchopneumonia of other types so as to be as clear and concise as possible in describing pathological shadows met with in the question under discussion.

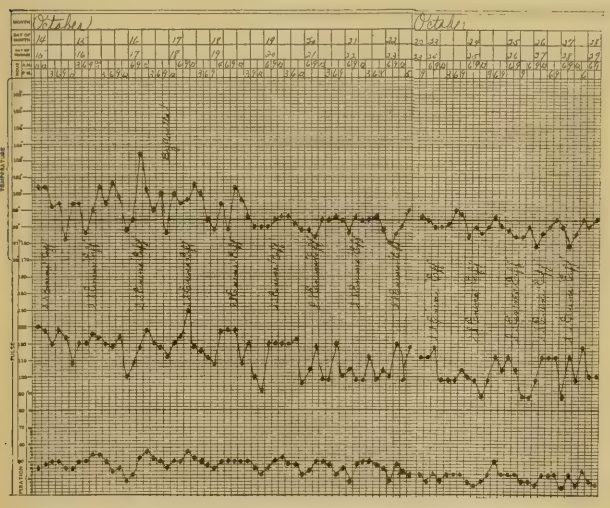

FIG. 7.—Chart showing temperature, pulse and respirations.

PROGRESS

October 16th—Child complained of slight dizziness, pleural friction rub heard in left lower axilla. Abdominal tenderness more marked and widely distributed than a few days previously. No abdominal distention condition unchanged. Cyanosis increased.

October 18th—Two attacks of epistaxis—condition unchanged.

October 19th—Some vomiting—decreased abdominal tenderness condition unchanged.

October 20th—Child stated that he felt better. Physical condition unchanged.

October 23rd—Child's condition greatly improved. Cyanosis not as marked as a few days before. Abdominal tenderness had disappeared. Spleen slightly decreased in size. Enlarged liver remained about same. Child still had severe cough. There were persistent subcrepitant râles throughout the entire chest, especially over both bases.

October 28th—There were only a few remaining subcrepitant râles at the bases of both lungs, posteriorally. Convalescent condition. All other symptoms and signs previously noted show marked improvement.

The highest temperature during the course of the illness was 102.4°. The lowest temperature 97.2. There was a characteristic evening elevation and morning remission. Convalescence occurred on morning of October 19th with a gradual return to normal. Pulse rate between 100 and 140 during height of illness; respiratory rate between 38 and 46.

DISCUSSION

The case is of interest from several viewpoints. In the first place the child's age, which was nine and one half years, is rather an infrequent period in life for this type of infection. As has been stated previously acute disseminated pneumonia properly belongs in infancy. The case was of further interest because of the widespread area of pulmonary involvement. In contrast to the usual and everyday picture as seen in a typical case of bronchopneumonia, small localized patches of normal lung was affected by consolidated areas here and there.

Life was threatened because of the marked pathology. This was evidenced and corroborated clinically by the general condition of the patient, the marked and unusual cyanosis and lastly, the extremely difficult breathing. Despite these physical embarrassments and the severity of the infection with the unfavorable prognosis, the patient survived and made a complete recovery. Again the case is of interest from a scientific viewpoint because of the readiness with which it can and has been confused with acute miliary tuberculosis.

The fever of irregular type with the characteristic evening elevation and morning remission resembled the tuberculous variety of the disease. The profuse sweats, the marked weakness, the rapid emaciation, the physical findings in the chest, the enlarged liver and spleen and the absence of the Widal reaction were points in favor of miliary tuberculosis. To this might be added the characteristic duration of the hectic temperature. Against the latter diagnosis may be mentioned the absence of a history of contact with tuberculous individuals and the certainty with which the disease could be ruled out in the patient. There were no tubercle bacilli found in the sputum. The enlarged liver and spleen so well presented by the patient during the height of the infection were in all probability caused by the toxemia. It is fair to assume that several bacilli became lodged and localized in these organs from the general circulation. It is only necessary to recall the function of the liver as the great detoxicating station of the human mechanism. The strongest argument against acute miliary tuberculosis is the fact that the child was completely restored to health. This conclusive evidence is borne out clinically, despite the hopeless outlook rendered by the x ray studies.

The treatment was largely expectant. Drugs were used judiciously as conditions arose and warranted therapy. Active stimulation and supportive treatment for the heart were instituted early. An abundance of fluid was made imperative from the start. Counter irritation over the chest, occasionally a sedative for excessive coughing and general treatment for hyperpyrexia were the salient points in treatment. Nutrition consisted of a light and easily assimilated diet.

SUMMARY AND CONCLUSION

1. Acute disseminated bronchopneumonia is rarely seen. The condition is infrequent in children.
2. The case report as presented occurred in a boy whose age was nine and one half years. Life was endangered both by the severity of the infection and the enormous pathology.
3. Because of the closely allied symptoms and signs found in acute miliary tuberculosis and of the x ray studies the diseases are often confused.
4. The individual made an uninterrupted recovery primarily because of his natural immunity aided by competent medical supervision and nursing care.

Tracheobronchoesophagoscopy

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The pioneering of this particular branch of surgery received its first impetus through the efforts of A. Kirstein, who by means of a tubular instrument obtained a direct view of the vocal cords and the bificuration of the trachea. About two years later Killian removed a foreign body from the bronchus of a patient. This demonstrated the possibilities of this specialty. He then developed a technic which is the ground work of our several modifications.

The instruments which are most popular in this country are the Jackson tubes, which differ from the Brunning tubes in several ways, but the main difference is that the light is at distal part of the Jackson tube, while the Brunning tubes have it at the proximal end and are larger in diameter.

Foreign bodies are aspirated in various ways but the greatest contributing factor is either carelessness or ignorance on the part of the parents, allowing their children to obtain objects which if swallowed may cause serious trouble. As the intruder comes in contact with the pharynx there is a sudden inspiration during which time the glottic chink is wide open, allowing the object to drop into the air passages. The paroxysm of coughing following is Nature's method of endeavoring to dislodge the intruder. The irritant action of objects in the air passages will many times depend on its chemical composition.

Once the intruder has passed below the vocal cords it is rarely that the expulsive coughing will dislodge the foreign body so that it may be expectorated. Hence follows the usual symptoms of foreign bodies in the air or food passages.

At this point, I wish to digress long enough to condemn the digital probing method., i. e., feeling around the pharynx and hypolaryngeal region with the finger, hoping to find and remove the intruder, the ill results of which we see too often, and is the cause of some of our serious complications.

Peroral endoscopy was the direct means of opening up new fields in diagnosis and operative procedure, among which we may merely mention irrigation of pulmonary abscess, dilatation of stricture of trachea and bronchi. Such operations could not be undertaken were it not for the ingenious instruments conceived by Jackson.

All cases that give histories which suggest some disturbance of either the air or food passages should be more carefully studied and examined. Many of these cases can be diagnosed and treated successfully by means of endoscopy.

For the sake of brevity, except where we wish to add emphasis, we have omitted considerable case history, x ray findings and other examinations.

Case I.—C. D., aged six months. Family thought the patient choked on a piece of meat given five days previously. When admitted, the patient had a temperature of 103° and physical signs showed bronchopneumonia. Laryngeal examination showed marked edematous condition of the cords and arytenoids. This was sufficient mechanical disturbance to account for the symptoms, nevertheless we did a bronchoscopy. With the tube *in situ,* breathing was greatly relieved. Unable to find any foreign body and with the removal of bronchoscope patient again showed signs of laryngeal embarrassment, therefore we did a tracheotomy, immediately after which the baby went to sleep, apparently greatly relieved. This continued for twelve hours, then the patient's condition became worse and he ceased to breathe a few hours later.

This case brings to your attention a point which we cannot emphasize too emphatically, namely, digital probing, meaning the probing with the fingers around the pharynx and even the larynx, hoping to feel and remove the foreign body, as happened in this case. There can be no doubt that this was a case of suspected foreign body.

Case II.—W. B., a child aged two years. Parents were under the impression that he swallowed "something that interfered with breathing." The family physician resorted to the usual manipulations, as digital probing in the hyperlaryngeal area. When this patient was admitted to the institution he was experiencing considerable difficulty in breathing. Examination of the larynx and adjoining tissues was a most striking example of unwarranted traumatism to these delicate laryngeal tissues.

Bronchoscopy failed to show any foreign body. The patient was returned to the ward and kept under observation for several days and then discharged. The condition of the larynx was the cause of all respiratory embarrassment, due to the overzealous digital examination. Discharged cured.

Case III.—L. B., aged three years, x ray showed safety pin open point downward third dorsal vertebra. Safety pin removed. This patient also had been unwontedly traumatized on account of the overzealous parents using digital probing. Discharged cured.

Case IV.—L. J., aged seven months, parents had no knowledge of patient swallowing a foreign body. Referred on account of restlessness and coughing. Preceding examination patient given large dose of paregoric as a means of quieting him. Examination showed a piece of peanut shell located below the vocal cords and fitting tightly on the trachea. Due to size of the foreign body which had absorbed considerable moisture, it was impossible to get the shell in the tube and withdraw it safely. Therefore performed a low tracheotomy and removed peanut shell through opening. Two days later removed tracheotomy tube and patient was discharged in four days.

Case V.—D. F., aged seven years, while running to school several days ago tripped and fell face downward on the ground and accidently inhaled a grass burr, the most pertinent symptom was wheezing during inspiration. The burr noted on posterior wall of trachea immediately above its bificuration. The burr was removed and the patient made an uneventful recovery.

CASE VI.—J. T., aged seven years, one week previous to admittance put some grass burrs in his mouth. While in the act of expectorating them he accidently inspired one of them into his air passages. Immediately was seized with a paroxysm of coughing, which continued for two days at varying intervals. The wheezing inspiratory sound was present in this case as in the previous mentioned, but otherwise did not show any ill result from the burr. Burr removed about one inch above the bificuration and adhering to the posterior tracheal wall. Result, recovery.

CASE VII.—I. C., aged six months, parents think patient swallowed small sliver of wood which was interfering with its respiration and nursing, x ray showed a foreign body of a metallic nature about the third dorsal vertebra. Intruder located just below cords. Small tin star was removed. Recovery.

CASE VIII.—G. H., aged three and a half years, a few hours previously the patient had swallowed a small metal cow which was found in a well known brand of popcorn package, as a prize. There was little respiratory embarrassment. X ray foreign body in trachea third dorsal vertebra. Small metal cow removed. Result, recovery.

CASE IX.—Mrs. M., aged thirty-five years, while eating rice pudding was seized with a paroxysm of coughing and choking, thought she swallowed a raisin which was causing the trouble. Examination revealed an intruder in the posterior pharyngeal wall immediately above the larynx. A straight pin which was head downward, firmly embedded immediately above the larynx, was removed. The patient made a complete recovery.

CASE X.—Baby J. J., aged one year seven months, swallowed a piece of corn three days previously, since then had intermittent coughing seizure and difficulty in breathing. Bronchoscope inserted and noted piece of corn, conical end upward, firmly impacted in right bronchus, grasped the intruder but each time the forceps would slip off. After several trials withdrew the forceps and bronchoscope to adjust for more firm grasping. Assistant informed me that patient ceased breathing; immediately did a low tracheotomy and with considerable effort removed the corn from its impaction. All artificial respiratory methods were of no avail. This was not a case of asphyxia as the intruder was firmly lodged in right bronchus. It was a combination of several factors in which the age of the patient, instrumentation plus the nature of the intruder, for as we all are aware, foreign bodies of the vegetable kingdom are more to be feared than any other class of offenders, all of which contributed to the fatal outcome.

CASE XI.—W. P., aged seven and a half years, three days previously while eating popcorn was suddenly taken with a paroxysm of coughing which continued for some time. Bronchoscope was passed and noticed foreign body adhering to trachea and just above the bificuration endeavored to grasp it but with each inspiration it would flatten out against the trachea and momentarily would be lost. Finally got the lip of the tube just in front of it and with the next expiratory blast it was blown into the tube. Foreign body was the transparent covering of the piece of corn. Result, recovery.

CASE XII.—R. C., aged three years, swallowed a piece of green peach. There was some difficulty in breathing, also coughing. The piece of peach was removed from right bronchus. Recovery.

CASE XIII.—B. C., aged fourteen years, swallowed a nickel two days previously, and had difficulty in retaining food. Removed a nickel from the esophagus about third dorsal vertebra, immediately below the foreign body was a pronounced narrowing of the lumen of the esophagus. Later history revealed that child had swallowed concentrated lye ten years ago. Recovery of foreign body but patient failed to return for dilation of stricture.

CASE XIV.—A. C., aged thirty-six years, complaining of irritation on right side of throat and hoarseness. Laryngeal mirror failed to show the cause of the symptoms, but when examined by means of laryngoscope noted papilloma attached to right cord. This we removed at a later date. The patient made a good recovery.

CASE XV.—P. T., aged two years, difficulty in swallowing for two days, also hoarseness, it was suggested that the case might need intubation as diphtheria was suspected. It is our practice in all diptheritic cases to examine the larynx before intubation. Examination showed large abscess just above and involving the laryngeal tissues. This was opened and tracheotomy performed. But patient died later from exhaustion.

CASE XVI.—D. S., aged thirteen years, swallowed some concentrated lye, eleven years ago. Now has difficulty in retaining fluids. By means of x ray and esophagoscope, located stricture, dilated same. Condition improving.

CASE XVII.—Mrs. I. Difficulty in swallowing for two months, but recently had been able only to take liquids, x ray shows mass encroaching on esophagus. By means of esophagoscope noted compression, also that mass did not involve the esophagus, this is perhaps a malignant condition of media stinum.

CASE XVIII.—T. J. O., a physician, who while eating his lunch very hurriedly, accidentally swallowed a piece of bone, immediately experienced pain in swallowing, the same radiating behind the sternum. X ray and esophagoscopy negative but we noted the abrasion of the posterior wall of the esophagus, which was no doubt the point of contact with the intruder. Patient was instructed to be quiet for a couple of days, also put on a liquid diet and bismuth subnitrate and discharged three days later.

CASE XIX.—Mrs. L. R., adult female, aged thirty years, thought she swallowed a fishbone; had the usual symptoms. X ray and esophagoscopy negative as to foreign body, we were able to note the cause of her symptoms, namely, the small abrasion on the wall of the esophagus. She was treated as the case above and made usual recovery.

CASE XX.—H. A., aged two years. Two days previously patient swallowed concentrated lye. Now having difficulty in retaining fluids. Examination showed most of damage in mouth and pharynx. The patient was returning for dilatation treatment of the esophagus.

CASE XXI.—O. W., aged twenty months. Four months ago swallowed some lye, now regurgitating food, unable to retain any fluids. Diagnosis stric-

ture of esophagus, gastrostomy performed, lated dilation with No. 270 French. Improving.

Case XXII.—M. B., aged five years; three years previously swallowed some lye, having difficulty retaining food. Diagnosis stricture of esophagus. Dilation twice weekly. Improving.

Case XXIII.—A. B., aged twelve years, eleven months ago swallowed concentrated lye, regurgitating food. Patient very much emaciated, unable to retain fluids. Diagnosis stricture of esophagus. usual dilation treatment, progress unsatisfactory.

CONCLUSION

The foregoing cases have been selected to demonstrate the variety of conditions which come under the observation of men doing this line of work. The removal of foreign bodies many times taxes our ingenuity but the results are most satisfactory. Cases which have strictures of the esophagus following the ingestion of concentrated lye are many times apparently hopeless but patience and prolonged dilation have been the means of restoring to good health a number of these unfortunate children.

The Bronchoscopic Treatment of Bronchial Asthma and Chronic Bronchitis with Case Reports

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Medical science dates from time immemorial and, were we to make a careful study of its scientific advancement, we would find that the progress could be attributed largely to the development of the mental faculties of the human race through education and environmental circumstances during its evolution. Although our present day method of medical practice is not *per se* an exact science, it may be considered as such from a practical viewpoint. I do not believe that any other branch of science has been subjected to such a tremendous amount of adverse criticism and yet continued to progress steadily. However, the science of medicine may be likened to many other sciences in that the development of many new discoveries can be traced to the untiring efforts, acumen and ingenuity of an individual, who often through necessity, has converted his imaginations into practice or, through deep study of some particular case and assimilation of ideas, has contributed some new method of scientific value.

The development of the laryngoscope in 1854 by Manuel Garcia added interesting chapters to medical history, and besides, opened up a new field for scientific investigation of a heretofore obscure region of the human body. Forty years later, in 1894, Kirstein described his method of direct laryngoscopy, which was followed shortly by a description of tracheoscopy by Kirstein and Mikulicz. In 1897, Killian developed upper bronchoscopy and, after a brief period, made a report on lower bronchoscopy. In 1904, Jackson introduced his instrument. His contributions to medical literature have been many, and his mechanical skill has been unsurpassed.

I believe that the medical profession, in general, are prone to think of bronchoscopy in synonymous terms of "Jackson," "bronchoscopy," and "foreign body." But we must also bear in mind the conspicuous ability and valuable contributions in this field of Bruening, Lynch, Lynah, Yankauer, Mosher, Carmody and a score of others deserving of recognition. Medical literature is voluminous with contributions from the foremost authorities, relating to the etiology, symptoms, diagnosis and treatment of almost every known disease. Albeit, when all is summed up, we realize how meager man's knowledge is, and how limited his ability accurately to diagnose and properly treat many of our common ailments. This can best be judged by the mortality statistics and autopsy findings and is largely due, I believe, to our limited ability to study tissue changes of many organs, during life, because of their obscurity and our desire to avoid exploratory operations because of surgical shock. We, therefore, depend largely on necropsy findings which, in many instances, give an entirely different picture at postmortem from that which is observed during cell life. The gross pathology is different.

Bronchoscopy, as applied to diseases of the respiratory system, opens up a vast field for diagnosis as well as a means for the application of direct therapy in respiratory diseases. As an aid to the internist and thoracic surgeon, it is of proved value. The method of treating pulmonary suppuration, as reported by Yankauer in 1916; *Lung Mapping* published by Jackson in 1918 and the writing of Lynah in 1921 on the localization of lung abscesses, have cast a new light on diagnosis and treatment that before was but vaguely understood. I shall not dwell on the many conditions adaptable to bronchoscopic study and treatment, nor touch upon the technique of bronchoscopy which has been so completely described by our teacher, Dr. Chevalier Jackson. But I should like to say again that, by the use of the bronchoscope in the diagnosis and treatment of diseases of the respiratory tract, we are able to observe directly, gross pathological changes occurring in the living tissue, and to make applications to the diseased parts, or to secure proper drainage when indicated. I do not mean to imply that bronchoscopy is a panacea for all respiratory diseases; it is merely an important adjunct in the treatment of these diseases and, in many instances, it far surpasses all other methods that the armamentarium of surgery now possesses. In the treatment of bronchial asthma and chronic bronchitis, a brief report of which I made in the New York Medical Journal and Record in

February, 1924, I am thoroughly convinced that the value of bronchoscopy, in the aforesaid conditions, is unlimited, for without the aid of the bronchoscope, many pathological conditions would remain in obscurity and untreated. The medical profession has been slow to realize the usefulness of the bronchoscope and the importance of close cooperation between internist, thoracic surgeon and bronchoscopist.

In the remaining portion of this article, I shall discuss bronchoscopy as I have practiced it in the treatment of bronchial asthma and chronic tracheobronchitis. Assuming that we all are familiar with the theories of the etiology of bronchial asthma, I will not approach this immense field which comprises volumes of medical history.

Bronchoscopic observations and treatment, as carried out in twenty-two asthmatic cases, presented a diversity of symptoms, comprising the well known asthmatic syndrome, diagnosed clinically as bronchial asthma. All but one patient had chronic bronchitis, resulting from inhalation of poisonous gas in the World War or from influenza, and attributed these to the asthmatic condition. One patient gave no history of influenza or pneumonia, and had seen no military service because of poor physical condition. Before starting bronchoscopic treatment, all patients were thoroughly examined physically; bacteriological examinations were made of sputum for the tubercle bacillus, Wassermanns were taken and radiograms made of the chest; tonsils, teeth and paranasal sinuses were carefully searched for foci of infection and when such were found, proper methods of surgical treatment were carried out. Only after other means had been tried without success—such as proper diet and hygiene—were these patients bronchoscoped.

On numerous occasions, I have had the opportunity to insert a bronchoscope during the height of an asthmatic attack. In performing bronchoscopy, I first anesthetize the postpharynx, epiglottis, vocal cords and pass the swab well down into the trachea, using ten per cent. cocaine. This procedure will facilitate the passage of the instrument. A Jackson bronchoscope, aspirating type, is then introduced and, through this instrument, one is able to remove any exudate that is adhering to the walls of the trachea and bronchi and to make accurate, direct applications to all inflamed hyperemic areas, as well as to atomize the entire tracheobronchial tree with a medicated solution. (I have been using adrenalin inhalant, which is an oily solution and very soothing to the mucosa.) For local application to the hyperemic areas, I have used with best results, a ten per cent. silver nitrate solution, although argyrol and silvol have been tried. The bronchoscopic picture encountered, especially during or immediately following an attack of asthma, is as follows: there is generally a thick mucopurulent exudate, strongly adherent to the walls of the trachea and bronchi, with one or more inflamed areas or patches, the favorite site being at or near the bifurcation of the trachea. One case presented a highly inflamed trachea, the inflammation extending well down past the bifurcation of the trachea. In every case, which was bronchoscoped during an attack, the mucosa presented a swollen or waterlogged appearance, and upon inserting the bronchoscope and applying adrenalin solution, there was an almost instantaneous relief experienced, with a rapid cessation of the attack, followed by copious expectoration of thick tenacious sputum, which lasted for several days. In all asthmatic cases under treatment, it has been my experience to find an accompanying bronchitis. Whether the bronchitis was the cause of the asthma, the result of it, or whether the two are interdependent, I am unable to state definitely. But, from observation, I am inclined to believe that the two are interdependent conditions and that the bronchitis should be treated, even though the asthmatic attacks have been completely eradicated.

The bronchoscope is of great value in the treatment of chronic tracheobronchitis after the internist has exhausted his efforts to relieve the patient. Many cases may be benefited by bronchoscopy plus medical treatment, including the administration of vaccines. In a series of twenty-eight cases, a large percentage was the result of inhalation of mustard or phosgene gas, and the remainder the result of influenza. The sputa were negative for tuberculosis in all cases. The solutions used for direct applications were argyrol ten per cent. to twenty per cent., glycerotannate ten per cent., mercurochrome five per cent., silver nitrate five to ten per cent., and chloretone and adrenalin inhalant, all of which have their value, depending largely on the bronchoscopic picture encountered and the judgment of the operator. The bronchoscopic picture observed, upon examination of patients whose ailments were the result of gas inhalation, is vastly different from those with bronchitis following influenza. In the gas series, the entire respiratory tract, from the larynx down, presented a beefy red appearance, highly injected. The tracheal rings standing out prominently and intensely white, furnished a marked contrast to the injected mucosa. Usually there is a profuse mucoid exudate covering the walls of the bronchi, with scattered areas of scar tissue. The series of bronchitis cases following influenza show a different picture. Here, the mucosa is of a bluish gray appearance, with areas of old fibrosis. The lumen of the bronchi are generally diminished in size, due to what is an apparent edema. The secretions are profuse and usually of a mucopurulent character. There seems to be a loss of muscular tone, and an interference with ciliary action, which allows the secretions to stagnate. Much good can be accomplished in these cases by bronchoscopic drainage and local applications of a solution which will stimulate the mucosa and cause shrinkage of the lumen of the smaller bronchi. And, by aspirating, we are able to remove the excessive secretions, thereby allowing the lung to be properly aerated.

Bronchoscopy is no longer limited to the removal of foreign bodies, but occupies a rightful place in the diagnosis and treatment of diseases of the respiratory system. Its application is not only of value in the diagnosis and treatment of diseases of the tracheobronchial tree, but may be used in certain lung conditions as well.

It is one of the few methods by which gross pathological changes may be accurately observed in the living tissue in the obscure regions of the human body.

Where there is pus, there should be drainage and,

in certain cases, this is best accomplished by bronchoscopy.

In my series of bronchial asthma cases, there was a coexisting chronic bronchitis, which required treatment between the asthmatic attacks. I believe that, by benefitting the chronic bronchitis, we do a great deal toward completely elevating bronchial asthma. In asthmatic cases, we should aim in every way to facilitate drainage of the viscid secretions, and this can best be accomplished by bronchoscopy.

Bronchoscopy is only an adjunct in the treatment of the aforesaid conditions. Rest, climate, hygiene, diet, vaccines and elimination of all foci of infection play an important part, and should be carried out along with the bronchoscopic treatment.

Adrenalin is of recognized value in the treatment of bronchial asthma. But I agree with the observations of Ephraim that intrabronchial administration of the drug is much more effective and lasting than its use by another method.

In the treatment of chronic tracheobronchitis, resulting from inhalations of irritating gases, much relief can be given to the patient. However, in my brief series of cases, I have not effected a complete cure.

The author's references will appear in his reprints.

Report of Three Cases of Abscess of the Larynx*

J. COLEMAN SCAL, M.D.

New York

These cases are reported because of their infrequency and the high mortality of this condition when not recognized early. The etiology of the condition is usually idiopathic. Traumatism of the larynx, inhalation of noxious vapors and exposure to wet and cold are some of the causes cited by various authors. The most probable cause however is a slight injury, occurring while eating, at the base of the tongue or spreading from the lingual surface of the epiglottis to the root of the tongue on the aryepiglottic folds.

The usual site for this condition is where the mucous membrane is loosely attached, such as the anterior surface of the epiglottis, aryepiglottic folds and arytenoid cartilage. In children this condition may be caused by infectious diseases of childhood and is usually mistaken for a retropharyngeal abscess.

Case I.—D. P., aged thirty-eight, tinsmith, felt well until three days before examination, when in tearing down a chimney he inhaled gas, soot and dust. On the following day he commenced to feel uncomfortable, complained of general malaise, hoarseness and painful swallowing. Upon examination, the patient appeared apprehensive, somewhat dyspneic and hoarse. Intense pain was referred to the larynx.

Upon indirect examination of the larynx, the epiglottis, the aryepiglottic folds as well as the entire mucosa of the left side appeared red, swollen and somewhat edematous. A well defined circumscribed mass could be made out at the left side at the base of the epiglottis. The view to the larynx was obstructed.

A bayonet shaped paracentesis knife was plunged into the mass, releasing a quantity of yellowish pus. Instant relief was experienced. The next day examination showed a subsidence of all symptoms, and the patient was entirely well in four days.

Case II.—L. T., aged forty-eight, housewife. Previous history negative. Four days prior to examination she awoke complaining of sore throat and painful swallowing. These symptoms increased, and in addition she complained of a choking sensation and commencing hoarseness. Upon examination the patient appeared to be extremely ill; her tongue was coated, temperature 101°, swallowing and talking were painful. There was slight hoarseness present. Upon palpating the larynx pain was experienced at the right side when pressure was exerted from the left to the right. Upon indirect examination of the larynx a reddish mass, the size of a pea, was plainly visible between the epiglottis and the base of the tongue. There was no edema of the epiglottis. The left aryepiglottic fold and left side of the larynx was red, somewhat edematous and of a glassy and transparent appearance.

On June 1st the patient was referred to the Beth Israel Hospital where the abscess ruptured spontaneously on the day of admittance; the symptoms immediately cleared up. The patient left the hospital on June 4th and was discharged cured on June 8th.

Case III.—S. S., aged forty-five. Previous history negative. Stated that without apparent cause swallowing became painful, the pain radiating towards the right ear. Upon examination two days later hoarseness and commencing dyspnea had set in. In examining the throat, by pressing the tongue down, a transiently visible swollen and edematous epiglottis was revealed. Upon indirect examination of the larynx, a bilateral diffuse swelling of the mucous membrane was visible. There was no abscess formation, the epiglottis was edematous but not ulcerated. Direct examination was refused. A diagnosis of laryngitis with commencing abscess formation was made and the patient referred to the hospital. Due to some misunderstanding, however, he was not admitted to the hospital but returned home and applied local treatment in the form of hot gargles and applications. The following day the patient reported he had a gush of blood and pus from his throat, which was followed by immediate subsidence of symptoms.

In conclusion, this condition should be always considered a serious disease which may end by suffocation or by involvement of the lungs or mediastinum or by septicemia. Where the condition is secondary, the primary disease causing this edema and abscess should receive proper attention.

44 West Seventy-fourth Street.

*Read before the Clinical Society of Gouverneur Hospital, November 19, 1925.

The Etiology of the Common Cold

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Washington, D. C.

Up to a few years ago there was not much attention paid to the common cold except to record its presence as annoying and its absence the result more often of good luck than of good judgment. About two years ago a physician in Texas told me that he had never learned to even spell the word coryza, until he began writing prescriptions for Spts. Frumenti, nor had he ever dreamed that its presence was so universal.

From the viewpoint of the public health the so-called common cold is a definite factor in reducing the hours of man's efficiency and piling up considerable economic loss. Add to the economic loss the usual loss of temper and you have a factor in human behavior which must be reckoned with. So we have set about to determine the cause of coryza with the idea of offsetting its prevalence and reducing its high mortality rate upon man's normally sweet disposition.

In the earliest writings can be found evidences that the noses of mankind have run as the result of catarrhal discharge following the coryza or common cold ever since man has kept a record of his performances. From the time of Hippocrates to the present day we have all been inclined to charge the cold up to meteorological causes, even despite the fact that we now recognize most such epidemics are usually due to specific bacteria. After a tremendous amount of work done by many and various investigators the general consensus of opinion is that there is no one organism which may be regarded as specific in causing the common cold. The flora of the nose and throat is never constant in and out of disease.

For several years in conjunction with the United States Public Health service we have carried on certain investigations regarding the minor respiratory diseases among the students of Howard University. In many instances these studies have been both interesting and disappointing, yet we have been able to reach certain conclusions. Always interesting it is to have the student tell you just how he "caught his cold" a sort of game which most persons enjoy. The various stories of sitting in cold rooms, sitting in churches underheated and damp, getting warm from exercise and cooling off too suddenly, attending a close, stuffy, moving picture house and wearing insufficient clothing are always taken as bearing much weight in the matter of etiology. Sudden changes of weather always come in for accusation by all persons who contract cold and we have come to regard this factor as rather constant. A rather careful examination of the nose and throat of all students revealed the fact that those who had enlarged turbinates, deflected septa, hypertrophied tonsils and adenoids always had more colds than those possessing a normal nasal mucosa. Not only did they have colds more frequently, but they contracted them more easily. We have found it very difficult to impress upon the average student the serious consequences which may follow the common cold, but the few whom we could persuade to have operations upon the nose and throat have improved in the matter of frequency and susceptibility to attack.

But still we are a long ways from the specific cause of the common cold. Bacteriological findings are never constant and include the Micrococcus catarrhalis, staphylococcus, streptococcus, Bacillus influenza, pneumococcus, the Bacillus of Friedlander and others, yet to no one of these can the common cold be charged. The students who come to Howard University represent such a wide geographical distribution that this institution affords a most unique opportunity to study the matter of climatic adjustment and the part it plays as an etiological factor in producing the common cold. Strange to say however this played a small part in the matter except where we found definite nasal pathology. In fact normal students from warmer, higher and drier climates than that encountered in Washington weathered the season better than the native students who had either mild or advanced nasal pathology. Therefore we come to the conclusion that no proper index to frequency and susceptibility to coryza can be reached without a careful examination, study and record of treated and untreated nose and throat conditions.

Certain observations lead us to believe that there are two types of coryza, the infectious and the noninfectious. Just recently through experiments upon volunteers we have come to a pretty definite conclusion that our earlier observations are correct. Also we observed that no cold was infectious, in its incipiency or during its first twenty-four hours, but some are and others are not after forty-eight hours duration. Thus we concluded that bacteria as an etiological factor are practically nil except as secondary invaders or upon the increase of virulency consequent to a pathological disturbance of the mucous membranes. Even in this instance no one organism can be regarded as specific because they are too variable and inconstant as to type, and they are infectious only in that they find a soil prepared for their invasion—but from other causes than bacteria. This hypothesis may not endure yet up to the present our experiments seem to point in the direction that each and every cold is to be regarded as an anaphylactic shock of varying degree as the result of the parenteral ingestion of some foreign protein through a nonresisting nasal mucous membrane. That foreign protein may be of bacterial origin or it may come from other sources finding its way most naturally to the nasal mucosa through the atmospheric route. This would account for the sometime infectious and the other time noninfectious nature of the common cold.

The literature of today is so filled with theories which aim to set us right upon the whole matter of infection, that we shall not enter into a discussion as to the merits of each, yet believing that all have a certain sound basis from which shall spring an entirely new knowledge of this most important sub-

ject. We, however, believe that the whole matter of immunity and infection rests in the ability of the tissue cells to combat through their proteolytic enzymes the invasion of both specific and nonspecific foreign proteins, or let us say bacterial and nonbacterial proteins. Health or disease (especially that which we call infectious) is always the result of the successful or unsuccessful war waged by the body cells through their power to digest and appropriate foreign protein completely or incompletely. Abderhalden has proved that within twenty-four hours after the injection of a foreign protein that proteolytic enzymes are found in the serum, and normally they are not found there. It is generally conceded that all antibodies (and we like the word interceptors better) which find their way into the body fluids originate in the tissue cells. Surely these interceptors or antibodies must have a specificity in tissue cell origin in order to combat and digest the protein for which that cell has a positive chemotaxis. Yet nonspecific protein therapy appears to prove that these interceptors may be stimulated and educated to resist the invasion of certain foreign proteins. Thus the degree of immunity depends upon the affinity the body cells have for foreign protein and the ability of the interceptors to select and appropriate from the complex protein molecule through cleavage to that stage of amino acid which is not only harmless to, but made useful by the tissue cells themselves. Incomplete cleavage or digestion of the protein molecule sets free toxic products which result in tissue irritation and disease.

The experiments we made regarding the etiology of the common cold helped greatly to convince us as to the truth of the above mentioned theory. To a great degree we followed out the line of experiment conducted by Mudd and Grant and reported in the *Annals of Otology, Rhinology and Laryngology* of March, 1921. A number of volunteers divided into two groups, one apparently normal and the other with decided nasal pathology, were exposed to a series of conditions usually regarded at least as contributing factors in the etiology of colds. During rather warm weather they were placed in a draft created artificially by an electric fan, immediately after walking rather rapidly for four or five city blocks. This exposure lasted for fifteen minutes during which time all began sneezing and blowing their noses, and in each the nasal mucous membrane recorded a drop in temperature from 1 to 1.5° C. and showed a marked vasoconstriction and ischemia. Wet towels applied to the back of their necks produced practically the same results, which were exaggerated when they were placed in the draft of the electric fan. At another sitting the draft was directed over the feet and legs and continued for about thirty minutes before sneezing began. The temperature reduction and ischemia were even then not so marked as in the other two experiments. Immediately after exposure these persons were properly wrapped in blankets and allowed to walk and sit around in a normal way. Then it was observed that the symptoms of coryza disappeared in from one half to one hour from the normal individual and lingered from twelve to twenty-four hours with those who had a decided nasal pathology. The normal individuals were subjected daily to the same sort of tests and on about the fourth or fifth day they developed a decided immunity and refused to show any symptoms of coryza. This we attributed to the fact that they had established a tolerance to the foreign protein, thus having become desensitized. Those with nasal pathology were put through the tests every forty-eight hours and reacted more slowly in the matter of reaching the refractory state, but eventually they all did.

These experiments seem to point out to us that the chilling of the nasal mucous membrane through exposure produces a vasoconstriction and ischemia which in turn lowers the proteolytic activity of these localized cells. Thus protein cleavage is but partial and incomplete thereby allowing the toxic product following this faulty enzymatic action to enter the contiguous sensitized cells and produce a mild anaphylactic shock which we term coryza. The incubation period and the duration of a cold are always in direct ratio to the suddenness of the chill administered and the recuperative power of the nasal cells in regaining their disturbed enzymatic action. In those persons with distinct nasal pathology (which is always more prevalent than one is inclined to believe) their tissue cells are less active and the hypertrophic condition exposes a larger field to the action of foreign proteins, thus making them always more susceptible to anaphylactic shock or coryza. This also must be regarded as a very definite contributing factor in bringing about the more serious sinus infections and otitis.

Working on the thory suggested above a new group of volunteers was selected for further experiments, all of whom were free from any nasal trouble, yet gave histories of catching cold easily and during each fall, winter or spring having at least one attack. Three received prophylactic injections of a stock vaccine containing the varied organisms usually thought to be associated with the common cold. Three received prophylactic injections of a nonspecific protein manufactured by a reliable house but not recommended for the use to which we were putting it, viz., as a prophylactic against coryza. All six volunteers were exposed to the same drafty treatments mentioned above with a result which is especially interesting and highly suggestive. The first day's exposure brought symptoms from all who had received the bacterial vaccine and from only one who had received the nonspecific protein injections. The second day's exposure showed that still all three who received the vaccine sneezed and showed symptoms of cold while none who received the nonspecific protein showed any symptom, though kept exposed for five minutes longer than the other group. On the third day's exposure for fifteen minutes none of either group manifested any symptoms except chilling of the mucosa and accompanying ischemia.

These rather suggestive data appear to hint at possibilities for further studies not only regarding the etiology of the common cold but all processes which we regard as infectious. We propose next spring and summer to try desensitizing hay fever victims by prophylactic injections of nonspecific protein. There is a possibility that more careful and painstaking study of the common cold will open up a better and more comprehensive knowledge of the whole matter of infection.

213 Florida Avenue, N. W.

Historical Medicine

Kenelm Digby: Amateur Physician

LOUIS J. BRAGMAN, M.D.

Syracuse, N. Y.

I.

Critical judgment by the contemporaries of Sir Kenelm Digby was decidedly more severe and less tolerant than the opinions accorded him today. Evelyn (1) stigmatized him with an epithet that has clung tenaciously as "an arrant mountebank." Henry Stubbes (1) labelled him "the very Pliny of our age for lying;" and with a faint touch of feminine kindness Lady Fanshawe (1) referred to his "infirmity" of falsifying reports of his scientific experiments. As a consequence of his supposed weakness in that direction he was made the recipient of much scorn and ridicule.

A review of the accomplishments of this energetic seventeenth century knight affirms, however, that it was his credulity rather than his infirmity which drew him towards so many of his ludicrous conclusions. Christopher Morley (2), whose contacts with the literary sidelights of Digby are so well known, protested that he should not be considered a mountebank or a charlatan, but instead "one who had a genuine scientific zeal for medical dabblings." Similarly, S. K. Lee (1), his biographer, wrote him down as a shrewd observer of natural phenomena, and a scientific amateur in contradistinction to a true man of science.

He was, of course, in the strictest sense neither a physician nor a surgeon, and his legitimate bond to the profession consisted chiefly in his additions to philosophical medicine. The bold manner in which he felt free to suggest new lines of practice would be loudly decried today, yet he represented, according to Richardson (3), an illustrious example of the "order of generally useful men, pioneers of science in her practical applications." And in frontier days is there to be desired a better type?

Digby had a broad enough knowledge of the natural sciences to earn for him a Fellowship in the Royal Society. His treatise *Of Bodies* (4) revealed a capable fund of information on plant and animal physiology, and he is believed to have been the first one to explain the need of oxygen in the cycle of plant life. Another noteworthy contribution was the demonstration of the practical value of lip reading in teaching deaf mutes to speak.

His deep interest in the problems of mankind was particularly shown when he urged Descartes to abandon his philosophical speculations and to direct his attentions towards the study of the human body and the means of prolonging life. His two posthumous publications, *Choice of Experimental Receipts in Physick and Chirurgery,* and *Chymical Secrets and Rare Experiments in Physick and Physiology,* cite further the investigating trend of his mind.

The name of Kenelm Digby is invariably associated with "the powder of sympathy" (5), which consisted of blue vitriol prepared in a very ritualistic manner as detailed by Hartman (6), his steward and laboratory assistant. This balm was accredited with the power of curing an injury if applied to the blood stained garments of the wounded person, or even to the weapon originally responsible for the trauma.

This one time popular nostrum in later years subjected its sponsor to much disparagement. Nevertheless Morley (2) expressed the opinion that there was "much excellent sense in his procedure. The injury itself was washed and kept under a clean bandage. . . . Sir Kenelm was quite aware of the public appetite for hocus pocus, and surely there was a touch of anticipatory Christian Science and Coué in his idea of keeping the patient's mind off the trouble and giving him this harmless amusement in the open air. . . . The injury was left to the curative progress of Nature. This theory of treating not the wound but the weapon might well be meditated."

Anne MacDonell (7) characterized Digby as "a professional unpaid physician who carried on a frequently interrupted practice." Surely not as a source of revenue, but as one manifestation of a diverse range of interests. Amateur actually he was, for his researches into the medical sphere were conceived only through a natural desire for knowledge, and to capitalize on his attainments was far from his motive. It would seem more appropriate, viewing him from the vantage point of time, to rate him as an amateur physician, and not, as did those of his day, berate him as a deliberate trifler in science.

II.

In common parlance *The Closet of Sir Kenelm Digby Opened* (7) is a cookbook, comprising as it does a number of recipes for the concocting of "Metheglin, Sider, Cherry-wine, etc., together with Excellent Directions for Cookery, as also for Preserving, Conserving, Candying, etc." The book contains several items of medical interest as illustrative of the dietetics of Digby:

Metheglin, a "sticky, sweet sort of beer" (8), is granted especial attention, being a "very wholsom Drink . . . esteemed to be an excellent Pectoral, good against Consumption, Phthisick, and Asthma; it is cleansing & diuretick, good against the Stone & Gravel; it is restorative and strengthening; it comforts and strengthens the Noble Parts, & affords good nourishment, being made Use of by the Healthy, as well as by the Sick."

A typical example of this marvellous species of drink is "Sir Thomas Gower's Metheglin for Health," in which are found sweetbriar leaves, sweet-marjoram, rosemary, thyme, marigold, borrage, bugloss, sage, spices, and honey. Its beneficent action was directed against "Consumption, Stone, Gravel, Weak-sight, and many more things."

"Mr. Pierce's Excellent White Metheglin," "a great Balsam and Strengthener of the *Viscera,*" is

also advantageous against coughs and colds and consumptions. Other valuable members of this class are, as designated: "An Excellent Way to Make Metheglin, Called the Liquor of Life," and "A Metheglin for the Colick and Stone of My Lady Stuart."

Meathe was also a much used beverage, one particular brand of which a Burgomaster of Antwerpe indulged in for many years, "and though he were an old man, he was of extraordinary vigor in every way, and had every year a child, had always a great appetite, and good digestion; and yet was not fat." Another enticing "Meathe Good for the Liver and Lungs" was to be taken "every morning a good draught of it, and at five in the afternoone."

An interesting glimpse at one habit of the discoverer of the circulation of the blood is presented in the form of "Dr. Harvey's Water-Cider, Wherof He Used To Drink Much, Making It His Ordinary Drink."

Recipes of many soups and broths are listed, with a view towards sick and convalescent persons. One instance is a "Grewel of Oatmeal and Rice," which "Dr. Pridion ordered my Lord Cornwallis for his chief diet in his looseness."

Evelyn records that "Digby advised me to try and digest a little better, and gave me a water which he said was only raine water of the autumnal equinox exceedingly rectified, and smelt like *aqua fortis*."

"An Approved Remedy For Biting of a Mad Dog" has a varied formula as well as a familiar addendum:

"Take a quart of Ale, and a Dram of Treacle, a handful of Rue, and a spoonful of Shavings or Filings of Tin. Boil all these together, till half be consumed. Take of this two spoonfuls in the morning, and at night cold. It is excellent for *Man or Beast*."

One naturally expects to run upon some sort of Elixir of Life, and a close approach is made in the "Aqua Mirabilis," which contains such ingredients as cubebs, gallingale, cardamus, mellilot-flowers, cloves, mace, ginger, cinnamon, juice of celandine, spearmint, balm, flower of cowslip, rosemary, borage, bugloss, marigold, sack, angelica and red-rose water, and sugar.

Its efficacy? It "preserveth the Lungs without grievances and helpeth them; being wounded, it suffereth the Blood not to putrifie, but multiplieth the same. This water suffereth not the heart to burn, nor melancholy, nor the Spleen to be lifted up above Nature; it expelleth the Rheum, preserveth the Stomach, conserveth Youth, procureth a good Colour; it preserveth Memory, it destroyeth the Palsie; If this be given to one dying, a spoonful of it reviveth him."

"An observant scholar who dabbled in medicine" (3), posterity does not allow Sir Kenelm Digby to be forgotten. And the medical profession can well be proud to accept as one of its own this selfmade, manysided, resourceful amateur physician.

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Contributors to the Science of Medicine

Victor Horsley

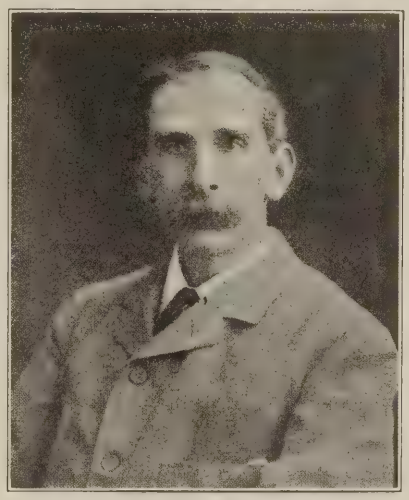
Victor Horsley of London and William Macewen of Glasgow were the two pioneers of brain surgery in Great Britain. Horsley died a martyr to duty and to love of humanity in the burning heat of Mesopotamia at the comparatively early age of fifty-nine. Macewen lived to the allotted age of three score years and ten and died in his bed.

Victor Horsley was descended from a family of artists on both sides. He was son of John Callcott Horsley the artist, and a grandson of William Horsley the musician. William Horsley married a daughter of John Wall Callcott, the musician, brother of Augustus Callcott, the artist. One of William Horsley's daughters married Isambard Brunel, the designer of the Thames Embankment and the Great Eastern Steamship; another daughter married Dr. Seth Thompson; another, Miss Sophy Horsley, was a great pianist and a friend of Mendelssohn; he dedicated some of his works to her. Victor Horsley's mother was a sister of Sir Francis Seymour Haden, the surgeon and artist, who was founder and first president of the Royal Society of Painter-Etchers.

Victor was born on April 14, 1857. He was brought up amid lovely surroundings in a delightful manor house near Cranbrook, Kent. Stephen Paget in his *Life of Horsley,* says that it would be a waste of time to decide what in Victor was Horsley and what was Haden. He got his good looks from his father and both families were represented in his

hands. He did well at school in classics and French but although fond of games did not shine in them. In January, 1874, he matriculated at the University of London and in July, 1875, he passed his preliminary scientific examination, and got a college gold medal for anatomy. The next three years, from October, 1875, to July, 1878, were given to anatomy and physiology. He had Ellis and Thane Burdon Sanderson and Schäfer for teachers. At the end of the summer session 1878, he got the Filleter Exhibition in Pathological Anatomy. In August, he passed the first examination for the degree of Bachelor of Medicine of the University of London; he was in the first class in both subjects, anatomy and physiology, and he gained the gold medal for anatomy.

In 1878 he clerked and dressed in the wards and out-patient department of University College Hospital and attended lectures, postmortem examinations, operations and so on. In 1879 Horsley, who was an excellent artist, made two of the drawings for Bastian's books published in 1880, *The Brain as an Organ of the Mind* and in 1880, in the April number of *Brain,* Bastian and he published a paper on the arrest of the development in the left upper limb, in association with an extremely small right ascending parietal convolution. The notes and drawings of this case had been made by Horsley in 1879. In 1880 Horsley and F. W. Mott were occupied for seven months, off and on, with the subject of bacteriology. They published their results in the *Journal of Physiology,* 1882, in a paper on the existence of bacteria or their antecedents in healthy tissue. Mott, who is still alive, and Horsley while yet students were doing work far in advance of their contemporaries. Horsley was at that time teaching, experimenting and publishing the results of his observations.



SIR VICTOR HORSLEY
(From Garrison's *History of Medicine.*)

In November 1880 he passed the final examination for membership in the Royal College of Surgeons and soon after became house surgeon of University College Hospital. In the summer of 1881, he took the degrees of Bachelor of Medicine and Bachelor of Surgery of the University of London. The gold medal in surgery was awarded to him with a university scholarship. At the end of 1881 he went to Berlin and Leipzig. He lived in Berlin with relatives of Mendelssohn.

During 1882-4, Horsley was surgical registrar to University College Hospital and in the same year was also appointed assistant professor of pathology. During this time he was writing and in July of that year was making some drawings for the ninth edition of *Quain's Anatomy.* In 1883 he became a Fellow of the Royal College of Surgeons.

In 1884, at the age of twenty-seven, he began to work with Professor Schäfer and Dr. C. G. Beevor and was appointed superintendent of the Brown Institution, London. This institution was founded for the study of comparative pathology, or in the words of its founder, Mr. Thomas Brown of Dublin, "for the founding, establishing, and upholding an institution for investigating, studying, and, without charge beyond immediate expenses, endeavoring to cure maladies, distempers and injuries, any quadrupeds or birds useful to man may be found subject to." The superintendents have been Burdon Sanderson, Greenfield, Roy, Horsley, Sherrington, Rose, Bradford and Brodie. The present superintendent is Mr. Frederick William Twort.

Horsley was superintendent for six years and in his time a company of men worked there. In his own share of the work Horsley followed three main lines of research: 1, the localization of function in the brain, and the pathology of epilepsy and canine chorea; 2, the thyroid gland, with special reference to myxedema and cretinism; 3, the protective treatment against rabies.

So far as the discovery of a successful treatment of myxedema is concerned it came not from one line of study but from many. Horsley does not stand alone. But it was he who founded in Great Britain the modern study of the thyroid gland and it was he who first in his own country suggested a rational method of treatment.

With regard to rabies Horsley was Pasteur's chief representative and interpreter in Great Britain. As for localization and function in the brain he did some very notable pioneer work and although it has been modified or corrected here and there, it constitutes a very memorable achievement in science. In 1885, he became assistant surgeon to University College Hospital and in 1886 surgeon to the National Hospital for the Paralyzed and Epileptic, Queen Square, London; and professor of pathology at University College. He was assistant surgeon to University College Hospital from 1885 to 1893; full surgeon from 1893 to 1900 and a surgeon in charge of hospital beds from 1900 to 1906; he then retired and was made consulting surgeon. In 1886 the Neurological Society was founded. Hughlings Jackson was its first president and Horsley was one of the original members.

In 1886, as said before, he was appointed surgeon to the National Hospital for the Paralyzed and Epileptic, Queen Square. It is not the only hospital of its kind in London but it was the oldest, the largest, the richest and the best. It was known far and wide for its work and teaching. Horsley may be said to have revolutionized the surgery there. As Stephen Paget says truly, fifty years ago and less than fifty years, the rules for operating on the head were those which Ambroise Paré had taught and followed in the sixteenth century.

The first real brain surgery done in Great Britain was done in 1876 by Macewen in Glasgow, but we can count on our fingers the cases of modern brain surgery recorded in surgical literature up to the time of Horsley's appointment to Queen Square. He had

prepared himself thoroughly for the task. He had been engaged for two years, in his work with Schäfer and with Beevor, over brain surgery on monkeys; he had done more than a hundred of these operations on animals. He knew what he had to do, he did not need to experiment on man, he had done so already on monkeys, and especially he had acquired familiarity with brain surgery under the very conditions he would find at Queen Square; the conditions of operating with neither wound nor scar nor depressed fracture to guide him, nor anything else except the facts of cerebral localization.

His first operation was on a young Scotsman of twenty-two who had had a brain injury at the age of fifteen and who had had fits of extraordinary frequency since that time. He had 2,570 fits during his first thirteen days in hospital. The diagnosis was scar involving the hinder end of the superior frontal sulcus. Horsley removed the scar in the brain, and the surrounding brain substance to the depth of two centimetres. The wound healed well; the mental condition was improved; and the fits ceased.

Stephen Paget tells an amusing tale in connection with this operation. The physicians watched it with intense interest and when it was over Hughlings Jackson let himself enjoy the relaxation of the strained mind. He beckoned to Ferrier: "Awful, perfectly awful," he said. Ferrier was shocked; the operation had seemed to him faultless. Again Hughlings Jackson murmured that an awful mistake had been made. "Here's the first operation of this kind that we have ever had at the hospital; the patient is a Scotsman. We had a chance of getting a joke into his head, and we failed to take advantage of it."

In August at the annual meeting of the British Medical Association in Brighton, Horsley read a short paper on brain surgery. He had done three operations at Queen Square, he described them, and showed the patients; excision of scar; removal of tuberculous tumor and of the thumb area; removal of splinter of bone and surrounding cyst. Among those who discussed the paper and congratulated him were Charcot, Hughlings Jackson and Erichsen.

In April, 1887, he published in the *International Journal of Medical Sciences* his first contribution to American literature; an essay on the accurate use of such lines and angles of measurement as give the relations between the surface of the skull and the surface of the brain, and enable the surgeon to visualize the motor area of the brain in its exact position under the skull. On June 9, 1887, he removed a tumor from the spinal cord; the first operation of its kind ever done.

On October 4, 1887, Horsley was married to Miss Bramwell and in 1891 settled in a house at 25 Cavendish Square. In 1891, too, he gave the Croonian Lecture; Horsley's Fullerian Lectures and with Sims Woodhead as editor founded the *Journal of Pathology*. He was also appointed vice-dean of the Medical Faculty of University College.

In 1894 the Royal Society awarded to him one of its gold medals and the University of Halle, at its bicentenary festival, gave him the honorary degree of doctor of medicine. In 1893 he made a long series of experiments with Dr. S. P. Kramer, of Cincinnati, and on March 15, 1894, at a meeting of the Royal Society, a paper by Kramer and Horsley was read. In 1897 he was invited to give the Cartwright Lectures in New York but could not accept the invitation. During all those years he was continually writing and reading scientific papers and reports of operations. However, from 1899 on he was so hard at work at practice and professional politics that it was impossible for even a man of his boundless energy and capacity for work to give much time to the writing of papers. By 1904 professional politics were less pressing and he embarked again on writing with renewed vigor.

Horsley was an extraordinarily versatile man and endowed with personality not untinged with aggressiveness. He was an impetuous fighter for a cause which he thought right and he belabored his opponents with vehemence. For example, he was a strong believed in total abstinence and his diatribes against the use of tobacco were almost as unrestrained in language although based on scientific principles as the celebrated *Counterblaste* of James the First. By these means he made many enemies and seemed to infuse into discussions in which he took part more than a trace of bitterness. He was intolerant of views that were in conflict with those that he held. But he was transparently honest and his intentions were of the best and it may also be added that in his opinions concerning alcohol he was before his time. Scientific men on the whole are now in conformity with his convictions. Horsley was a keen archeologist and knew his subject by observation and not from books. In 1902 he received the honor of knighthood, an honor indeed not at all in keeping with his great and deserved reputation. Many British surgeons and physicians with scarcely a tithe of his ability have received far greater honors.

Horsley was a name known and honored in Europe and America. He was one of the few outstanding figures of the medical world in his generation, and it may be said that he received honors from almost every university in Europe. He was greatly interested in the question of national deterioration and gave evidence before the Committee on Physical Deterioration. Although he was interested in all aspects of this question he was limited to discuss but one phase of it, the venereal diseases and the measures to be taken against them. He urged that a commission be appointed to inquire into their prevalence and pointed out that statistics founded on hospital practice were useless, as also were statistics based on death certificates. He was in favor of compulsory notification. In 1906 he gave up his position at University College Hospital and his professorship of surgery at University College. He had completed twenty years at Queen Square and in his Toronto address on surgery at the meeting there of the British Medical Association he reviewed what he had learned in all that time.

It has been said that he would have done much more for science if he had steered clear of politics, but Paget thinks that there is very little truth in that saying. His chief discoveries in physiology and surgery were made in the wonderful years between 1884 and 1900 when politics concerned him little. Also, the output of his work for science, which always varied, never stopped; it went right on up to the time of the war. He spoke and wrote on almost every angle of nervous function. In 1910 he rushed into

public life with absolutely unrestrained ardor. He was a radical of the radicals and in December election, the general elections were on at the time, he stood as candidate for the University of London. He is said to have made up his mind long before 1910 that when he was sixty he would retire from practice and enter Parliament. He failed at the general election and never had the opportunity to win success out of failure.

On January 19, 1911, the Lannelongue Prize was given to him. It had just been instituted by Professor Lannelongue, of Paris; a gold medal and 5,000 francs, for the surgeon who in the previous ten years shall have done most for the advancement of surgery; to be awarded, once in five years, by a committee of surgeons, representatives of many nations, Great Britain, and Ireland; the United States and Canada; South America; Japan and China; Italy, Spain, Portugal and Mexico; Scandinavia and Holland; Belgium; Germany; Austria and the Balkan States.

Apropos of this unexampled honor Lady Horsley wrote to a friend, "Victor has been awarded the Lannelongue prize, for the greatest advance in surgery in the last ten years; and goes to Paris to receive a gold medal and a douceur of £200. And a grateful patient in Australia has sent us a white kangaroo! Rings at the bell, therefore, make us extremely nervous, and at the first approach of a railway cart I prepare myself for instant flight." He and Lady Horsley were ardent supporters of the female suffrage movement.

Horsley was essentially democratic and used all his influence to democratize the British Medical Association and the Royal College of Surgeons. His efforts in this direction were of little avail at least so far as the college was concerned. He spent much of his time in fighting against alcohol. It was the passion of his life. He was a fine speaker and model lecturer and used as well his unrivalled knowledge of science and his wide experience of practice.

But his remarkable powers of tongue which were scathing and pen which was pungent made him feared by the members of his own profession and he was quietly kept out of one thing and another by narrow minded cliques. Not only his own profession but the professional politicians were afraid of his honesty and great ability and he was ignored, really a great compliment to him. Moreover, his unpopularity extended to his practice. Medical men would not send their patients to him and some patients were so adverse to his politics that they preferred another surgeon.

And then the war came. Two of his sons joined at once and in May, 1915, the General Hospital to which he was attached was ordered to Egypt. On March 25, 1916, he went to India and in April was in Mesopotamia; he died of heat stroke and overwork at Amarah on July 16, 1916. The shade temperature in Mesopotamia then was 110° and the atmosphere humid. Mr. Martin Swayne in his book *Mesopotamia* describes the funeral: "Shortly after we left Amarah, the news came that Sir Victor Horsley had died. It was in a season of extreme heat, when death comes suddenly in many forms. Eighty officers attended his funeral. He had a coffin. Wood was precious in Amarah. There were some other bodies sewn up in blankets. A long dusty march of a mile to the cemetery, a shallow earth grave, a brief ceremony, the same for all, and a weary tramp home in the sun; that was the final picture. There is one more detail to add, and that is the lovely playing of the 'Last Post' over the graves."

Victor Horsley was not only a physiologist and surgeon of international fame, an original thinker not afraid to put his views into practice, a pioneer in every respect and possibly the greatest man of the medical world of his time, but he was a great moral force. He stood unflinchingly for clean living and preached his gospel undeterred by the fact that by so doing he incurred unpopularity and even odium among some. He kept his ideals and acted up to them, indeed sacrificed himself for them, but his name will live.

Cancer in History and Art.—Dr. Henry Meige, professor of anatomy at the School of Fine Arts, gave recently at the French-Anglo-American League against Cancer a very interesting lecture on cancer in history and art.

Although we have very little information on the pathological condition of celebrated men of antiquity, a search in modern times gives more fruit. It is a curious fact that no king of France for ten centuries was unafflicted with cancer. Only two queens, Marie de Medici and Anne of Austria, contracted it, one having probably had cancer of the stomach, the other without doubt cancer of the breast. But, although royalty dwelt for a thousand years under the shadow of this terrible malady, it apparently disappeared with the founding of the Empire, with one exception. Napoleon I undoubtedly died of a cancerous ulcer of the small end of the stomach, complicated with an hepatic affection, contracted perhaps at St. Helena.

Rare in history, cancer is still more rare in art. No artistic reproduction of any kind exists which is incontestably related to it.—*Æsculape.*

The Psychosis of Villon.—In the study that he has published, the *Psychose de Villon,* M. R. Yves Plessy inveighs against the "whitewashing" and concealments prevalent of the real character of Villon. He considers him the best poet of his time; that is an irrelevant matter, but what of the man himself? Bully, murderer, picker of locks, swindler, habitual sneak thief. Was he mad? Perhaps not, but an overwhelming heredity led the way to his psychosis. He showed in his characteristics the stigmata of degeneracy; the weakness of his constitution was balanced by his precocious mental keenness; he was unstable, unmoral. The murder of the monk Sermaise, whom he killed in a brawl, was purely impulsive. We must remember, however, that he was provoked and that the dagger of Sermaise was drawn first. This murder was the chief cause of the misfortunes of Villon, and threw him into the underworld. It did not destroy his talent, for he was always able to apply it to the situation in hand. . . . In short, M. Yves Plessy wishes only to correct a misunderstanding on the part of those writers who have believed that they should endow Villon with the flower of all the domestic virtues.—*Translated from Æsculape.*

Editorial Articles

TUBERCULOSIS AND THE TEETH

At one time the dental pulps were supposed by many physicians to be the portal of entry of the Bacillus tuberculosis into the human body. This is not surprising when the association of diseased and defective teeth with tuberculosis is remembered. In fact, it is surprising how very frequently the tuberculous have bad teeth. Tuberculosis seldom develops in well nourished people. Tuberculous people are seldom well nourished, hence there is a vicious circle of bad teeth, bad nourishment. From this it follows that one of the best means of preventing tuberculosis is to insure a proper degree of nourishment at all ages, but especially among growing children.

The prime prerequisite for this is sound teeth and healthy gums, because the person having these is more apt to eat with relish a certain amount of tough, fibrous, bulky vegetables, fruit and meat. This is a dietary calculated to promote health, increase nourishment and produce a resistance to tuberculosis. On the other hand, such a dietary is avoided by the person with sensitive teeth or gums and replaced by a soft, badly balanced diet provocative of indigestion and malnutrition.

These seem like trite and threadbare statements, yet they cannot be repeated too often and every physician who makes a physical examination of a patient should note the condition of the teeth and if it is not good, refer the patient to a dentist after explaining carefully the vital necessity of putting his mouth in a healthy condition and so maintaining it. While it is true that most cases of tuberculosis are contracted in childhood, it should be borne in mind that it is during adolescence and adult life that the disease most frequently manifests itself. Good teeth and good nourishment constitute our strongest single weapon against tuberculosis.

PRECANCEROUS STATES

In the efforts being made in many countries to discover the cause of cancer, the importance of prevention and effective treatment seems to be somewhat overlooked. The discovery of the cause, and it appears more than likely that there are several agents or factors concerned in its causation and that it is of multiplex pathology, does not signify that curative or remedial treatment is immediately at hand. The history of the discoveries of the causes of disease tend to negative this conclusion. If, for instance, a germ of cancer is found, it does not necessarily mean that it will be possible to treat the disease successfully but rather that it may be possible to prevent it from developing. It would be an immense advance in this direction if precancerous states could be correctly diagnosed as it would or might establish a more definite means of preventing the proliferation of the cancer cell.

At a meeting of the Surgical Section of the Royal Society of Medicine in London on November 14, 1925, a discussion took place on precancerous states. Among the speakers Dr. E. Shaw said that he had no doubt of the existence of a precancerous state. The two main conditions to be considered under the term were chronic inflammations and simple new growths. In his opinion a breast affected with chronic inflammation was in a precancerous state, as also were many skin and mucous papillomata showing invasion of the deeper tissues by superficial cells. In the cervix evidence of development of carcinoma or chronic inflammation was provided by the transition from squamous to columnar and the appearance of definitely malignant groups of squamous cells deep in the muscle.

Dr. R. M. Livingston pointed out that a chemical contrast between acute and chronic inflammation had been determined. The reaction of the tissues in chronic inflammations was invariably acid while in acute inflammations it was alkaline. Pyogenic microorganisms at work produced acid which was oxidized by the action of the tissues in acute conditions. It might be that this acid secretion rendered tissues more vulnerable to cancer. Dr. Gye's work bore out this hypothesis. On the whole the discussion did not tend to show that many precancerous conditions can be detected.

In this connection a paper contributed by Dr. J. Shaw Mackenzie to the *Journal of Tropical Hygiene* is of great interest. This investigator has been working for many years in the laboratories of King's College, London, and has been greatly impressed by the varying degree of resistance which the human subject offers to the invasion by cancer. He points out that a certain number of mice possessing a natural immunity are negative to tumor inoculation and he thinks it not unreasonable to presume that such an immunity may be present more or less in human beings. Therefore, he argues, it is most important to discover if any differences exist between the blood of cancerous and noncancerous subjects and whether the blood can be so treated in cancer patients as to increase the resistance of the tissues to the disease.

Dr. Shaw Mackenzie has found that the blood of cancer patients is deficient in lipase, the fat splitting

ferment of the pancreas, and that the resistance to cancer tends to rise and fall in proportion to the amount of lipase in the blood. He has further shown that the fat splitting lipase is separable into two parts, an activating coenzyme and an inactive one. The two are active in conjunction but each is inactive by itself. He holds that this finding is in keeping with Dr. Gye's finding that the cancer tumor contains a specific factor plus a virus, the cooperation of both being essential for the production of cancer tissue. Thus Dr. Shaw Mackenzie makes use of the lipolytic action of the blood as a means of diagnosing the presence or otherwise of cancer. A normal reaction suggests strongly its absence.

It logically follows the findings of Dr. Shaw Mackenzie that if the presence of cancer is associated with defective enzyme action in the tissues and in particular with tissue lipolysis, treatment must be directed to providing the tissues with lipase activators such as pancreatic coenzyme. Moreover, it is claimed that successful results have been obtained along these lines. If the findings of Dr. Shaw Mackenzie that he can diagnose precancerous states even with fair degree of accuracy are confirmed, a great advance in the prevention of cancer will have been made.

WALKING THE FLOOR

"He walked the floor all night." So the biographer of Lincoln tells us in narrating times of special stress, and walking the floor for shorter periods at least is common practice with many lesser persons in like condition of anxiety or indecision. So the adult, and even the infant in its times of ill adjustment of "internal to external relations" seems to profit by being perambulated rhythmically to and fro even in the small hours of the night. Nor is this business of walking the floor confined to humans. We come naturally by it, for animals in like situation, confined within walls (as the human is confined in more complicated fashion by abstract barriers which he knows not how to surmount or in what way to surmount) paces back and forth, back and forth, for much of his day and much of his year.

Walking the floor is a natural expression of superfluous energy—of having nothing else to do, as in the animal born in captivity, or of not knowing what else to do, in the case of the vigorous perplexed human.

The human race is characterized by having a superabundance of nervous energy, and, unfortunately, living is not only more complex and perplexing than ever, but old means of letting loose that energy are being closed up more and more. Walking the floor to slow rhythm is not sufficient for the surcharged battery of the modern—he must dance the floor at wild speed and that with extraordinary contortions, even at the time he is taking in more energy—at meal time, or he rushes into athletics which he carries to the limit. He even adds energy to his own, and explodes gasoline in the nervous system of his automobile while he scurries at breakneck (for the person in the way and often for himself) speed over the country.

These surcharged nervous systems, when their discharges are in the right direction, are very excellent things, but the person who naturally plods back and forth through a night is a much more reliable and effective agent in the business of life than one who seeks outlet in fitful spasms of jazzmanian movements or in competitive sports. No matter what the calling, the person capable of splitting rails all day has been most capable of the highest type of work in his special line. Our Goethes, Brownings, Beethovens, Michelangelos, Sargents, Listers, and Oslers, have not been flash-in-the-pan people; they have been nervous—highly nervous—but not merely neurotic.

The disappearance of manual labor and our increasing leisure make it more and more imperative that means of healthful expression of energy be found, not only for young people but for adults, and that the upbuilding of capacious and well controlled nervous systems be a special feature of all child culture. We need to take this into consideration in our educational systems into which the young of the species are driven against their wills. Anything to which we are so exposed is not likely to be altogether beneficial to health unless planned and managed with the utmost wisdom. Education has always been an experiment, and it is a question whether it is altogether a successful experiment from the point of view of producing a well ordered nervous system, although it is just this that it ought to aim to secure. That the school is adapting itself to the need for nervous outflow—to selfexpression—is a sign that it is moving in the right direction. It is doing much to further the general hygiene of youth, it gives more opportunity to play for all and less attention to interscholastic athletics, and, on the whole, it is living up to its light when it is considered that it arose in an era of asceticism and had its early dwelling in the cloister. It is still, however, an indoor affair and mind is largely considered as something distinct from body.

It is in the more important periods, before school days arrive, that the nervous system is planned and the foundations laid and it is in the hygiene of this period for which the nurse, family physician, the obstetrician and the pediatrist are in large degree responsible, that most can be done. After this period

the guiding of superfluous energy into best channels of expression becomes of growing importance to the individual, to the home and to the community.

PSYCHOLOGY AND FICTION

Novels of recent years have teemed with psychological interest. Dostoievsky, Marcel Proust, James Joyce, D. H. Lawrence, some women and the rest have analyzed human motives and subjected to a minute dissection the unconscious mind to their heart's content and to the delight of some of their more sophisticated readers. And now these probers into the mysteries of the human ego have themselves undergone at the hand of a psychologist an intensive analysis.

Dr. Joseph Collins in *The Doctor Looks at Literature,* and to a lesser extent in *The Doctor Looks at Biography,* has attempted to explain to the unsophisticated reading public unversed in psychological lore the meaning of the seemingly prurient fiction so prevalent in these latter days.

In considering critically certain writers of fiction from the point of view of psychology Dr. Collins has succeeded more than passing well.

In the *Ulysses* of James Joyce, of course, he sees more than the chaotic outpouring of a depraved mind and attributes to him the gift of genius run riot. To Feodor Dostoievsky he pays unstinted homage stating that in his opinion posterity will link his name with Pushkin and Tolstoi as the three great writers of their times. Dostoievsky describes many of the nervous and mental disorders, as mania and depression, the psychoneuroses, hysteria, obsessive states, epilepsy, moral insanity, and that mysterious mental and moral constitution termed degeneracy with a masterly delineation. Moreover, there is no evidence or indication that he had access to books on these subjects so that it may be inferred that he evolved this knowledge from his inner consciousness aided by observation and quickened by the fact that he was an epileptic himself and that one of his parents appeared to be mentally diseased while the other was physically and perhaps mentally diseased as well. Also his upbringing and environment tended to foster any neurotic qualities which may have been inherent.

The author gives an interesting dissertation on epilepsy and points out that Dostoievsky had the epileptic auræ and equivalents in an unusual way and with extraordinary intensity, and the narration of them as they were displayed in the different characters of his creation who were afflicted with epilepsy is an important part of his books.

It is a somewhat curious point that although the alienists of the day depict Dostoievsky as an acute psychologist he disclaimed this title and declared that he was only a realist in the highest sense of the word, that is, he made a pen picture of all the soul's depths, which he went on to say he regarded as the only true realism. Dostoievsky was a mystic idealist who represented the essence of the Russian soul through his unconscious to his conscious mind and then expressed it. That he did this in a disorderly way was because he was abnormal and also because it is not a part of the typical Russian mental or intellectual make up to act, speak, or write logically and clearly.

Dr. Collins hails Marcel Proust as the greatest psychological novelist of the day; many other critics both of literature and psychology will think that this estimate of the brilliant erratic French writer is much too high and that in spite of his superior clarity of expression and language he does not compare favorably with the Russian. Other writers of the same school whom the author lauds and at the same time damns with faint praise or is outspokenly critical of the abuse of their literary powers or of the expression of their psychological acumen are Rebecca West, Dorothy Richardson, Katherine Mansfield, Stella Benson, D. H. Lawrence and J. St. Loe Strachey.

One may pardonably wonder what the esteemed precise and perhaps pedantic editor of the *Spectator* and of several biographies of well known people which have made public more of their failings than their virtues is doing *dans ce galère.*

The point which strikes one most forcibly in reading these two last books of Dr. Collins is that in *The Doctor Looks at Literature* at any rate, the great writers analyzed appear to be or to have been diseased men with diseased or, at least, abnormal minds. The chief theme is and was perversions. This is doubtless the feature which makes their writings and doings of paramount psychological interest but it gives one to ponder over Max Nordau's statement that genius was a form of mental aberration and to believe that he had strong grounds for this dictum. By no means the last word has been said on psychology and Dr. Collins's analysis of fiction and psychology and of the writers thereof may aid in elucidating some of the obscure points and some of the hidden crannies of the unconscious mind.

Whatever the reader may think of Dr. Collins's powers of psychological deduction he cannot fail to be impressed by the wide knowledge of literature and especially of biographical literature possessed by him and displayed in his writings. This knowledge is encyclopedic in its range and must have involved much strenuous and meticulously careful reading. He makes few mistakes and misses few features of psychological concern. He is somewhat too dogmatic in his statements and hypercritical but the books referred to are eminently readable as much on account of their human interest as for their literary merits.

Obituary.

SIR JOHN MacALISTER, F.S.A.,

London

Sir John MacAlister died in London on December 1, 1925. He was born in 1856, educated at the High School in Liverpool and was for three years a medical student in the University of Edinburgh. As his health broke down he did not continue in the study of medicine, but became sublibrarian of the Liverpool Library. He exhibited all the characteristics of the good librarian, love of books, love of order and so on, and was presently appointed chief librarian of Leeds Library. He did extraordinarily efficient work in this position and played a leading part in designing the internal structure and arrangements of the new library in Leeds. In 1877 the National Liberal Club of London appointed him librarian but he had held this position for a short time when he was offered the post of librarian and secretary of the Royal Medical and Chirurgical Society. He accepted the offer with pleasure.

When MacAlister took charge, this society had its quarters in a small house near the Middlesex Hospital, the membership was comparatively small and the funds were low.

MacAlister took counsel with Sir Andrew Clark, the leading physician of the day, and with his financial aid obtained a fine house in an excellent locality. Hardly had the society settled in their new house when MacAlister, again supported by Sir Andrew Clark, brought forward a scheme for the amalgamation of the medical societies in London, eighteen or so in number. If Sir Andrew Clark had lived doubtless this scheme would have been carried into effect promptly. Owing to his death it was left in abeyance for a few years.

In 1905 preparations were well advanced and Sir R. Douglas Powell, who was then president of the society, gave the weight of his authority in support of the scheme, which met with the approval of all the members. When this amalgamation plan had come into force, it was found that there were so many members of the combined societies that the house of the Royal Medical Chirurgical Society was not nearly large enough. MacAlister was again the prime mover and by the exercise of tact and suavity, backed by boundless enthusiasm, he not only found a most suitable site for a new building, but contrived to raise sufficient money to erect one in keeping with the dignity and importance of the Royal Society of Medicine, the name given to the amalgamated societies. It is situated at the corner of Winpole Street in the heart of the "doctors'" district of London, Winpole Street being one of the streets in which practically every house contains physicians and surgeons.

This then was the monument Sir John MacAlister raised to himself. When those who knew him look at this building they will not fail to recall the many services he rendered to the medical profession, services unselfishly given, as he was one who never spared himself but thought solely by the cause he loved and for which he worked without stint.

Sir John MacAlister was a fine, handsome man of the Viking build and appearance and with charming Celtic manners. He possessed the Highland gift of imagination, but held in check by shrewd Scotch qualities of organization fortified by incredible industry. The more difficult the task the better he delighted to grapple with it. In addition to building the house of the Royal Society of Medicine with its really magnificent medical library, he largely helped to promote the fellowship of medicine scheme and it may be said was particularly interested in American medicine and never missed the opportunity to praise American medical methods and the energetic way in which medical men of this country got things done. There are many medical visitors to London from America who will remember Sir John MacAlister's genial, pleasing manners and will regret the passing of such a personality.

JUAN GUITERAS, M.D.

Havana, Cuba

The whole medical world suffered a significant loss in the death on October 25th of Dr. Juan Guiteras, Cuban pathologist and hygienist, and former Minister of Health of the Republic Cuba. Dr. Guiteras was born at Matanzas, Cuba, on January 4, 1852. He was educated at La Empresa, Matanzas, and received his medical degree from the University of Pennsylvania in 1873, which also bestowed upon him the degree of Ph.D. He was appointed in the same year resident and visiting physician to the Philadelphia Hospital and retained the position until 1879, when he entered the marine hospital service, where he remained for ten years. He held the professorship of medicine in the Charleston Medical School from 1884 until 1888, and of pathology in the University of Pennsylvania from 1889 to 1899. During the Spanish-American War he served on the staff of General Shafter as yellow fever expert, having served in the capacity of such an expert during all the epidemics since 1881. In 1900 he was appointed professor of general pathology and tropical diseases at the University of Havana, where he remained until 1921. In 1909 he was made Director of Public Health of Cuba and served in that capacity until 1921. From 1921 to 1922 he served as president of the National Board of Health and as secretary of public Health and charities of Cuba.

His great work in yellow fever is too well known to need comment here. He had been a member of the Yellow Fever Commission of the International Health Board since 1916. To mention a few of the outstanding features of his work and career—he discovered the filaria Bancrofti in the United States, and the uncinaria in Cuba. He established the importance of infantile yellow fever in the endemicity of the disease. His written contributions to the study of this scourge of the tropics are some of the most valuable documents that medical science possesses on this subject. He was an authority also on other tropical diseases.

Many American societies made Dr. Guiteras an honorary member of their bodies, among them the American Medical Association, the Association of American Physicians, the College of Physicians of Philadelphia, and the American Society of Tropical Medicine.

School of Tropical Medicine and Hygiene Institute, Calcutta

Travel Notes on India and the Far East

AUGUST SCHACHNER, M.D., F.A.C.S.
Louisville, Ky.

India, whether considered from an ethnological viewpoint, with its teeming masses of humanity sharply divided into almost innumerable casts, or from a religious viewpoint replete with its religions and their countless methods of worship, with a fervor unknown elsewhere in the world, or, from a medical viewpoint with its array of tropical diseases, its practically unchecked waves of plague, cholera, smallpox, and other epidemics, is easily the most interesting and frequently the most trying country that a traveler can select for his investigation.

The Mohammedan tombs in the North are as sublimely beautiful as the Hindu Temples are impressive in the South. Between the two are the gorgeous palaces of the Rajahs and Maharajahs as classical examples of Eastern magnificence, that stand out in bold relief upon a background of Oriental misery; it is indeed a land of extremes.

Travel in the East, as elsewhere, is no longer what it was. To the passport annoyances are added the police surveillance which suggests the growing suspicions of the white man as to the uncertainty of his footing and the uncomfortable premonition that the "rising tide of color" is after all not a mere figure of speech. When the expression of "white arrogance" assumes a sufficiently definite form as to find its way into the British India government report (1924), you begin to realize that the sleeping colossus is turning in his slumbers preparatory to the awakening.

Extravagant estimates as to the annual number of deaths from such diseases as the plague and cholera were not uncommon, originating among members of the Indian Medical Service. There are estimates of as many as a million deaths each from plague and cholera during the course of a year throughout India. This is likely overdrawn but it would be difficult for the government itself to give more than approximately correct figures on their death and birth rates.

The Directors' Public Health Report of the Bombay Presidency published February 9, 1925, yielded the following extract: "The increased mortality over 1922 which was the low record year, from 452,581 deaths to 496,244, was mainly the result of epidemics, plague, cholera, measles and smallpox, which carried off over 50,000 people, or thirty-one and a half times the number in 1922. Influenza as a factor in causing deaths has steadily diminished since 1918, when the estimated number of deaths was 1,041,481. In 1923 less than a thousand deaths were returned as being due to this cause. The number of deaths from cholera was 9,221, against 2,768 in 1922, and 12,886, the average for ten years. During the year there were 33,741 plague deaths, equal to a death rate per thousand of 1.76, or four times the figure for 1922. Dharwar and Belgaum are the chief plague centers for the presidency. In Satara-town practically thirty-one per thousand of the population died of plague. Deaths from smallpox numbered 2,811, as compared with 1,170 in 1922."

These extracts while dealing with conditions in the province of India known as the Bombay Presidency, will afford some basis for an estimate of conditions.

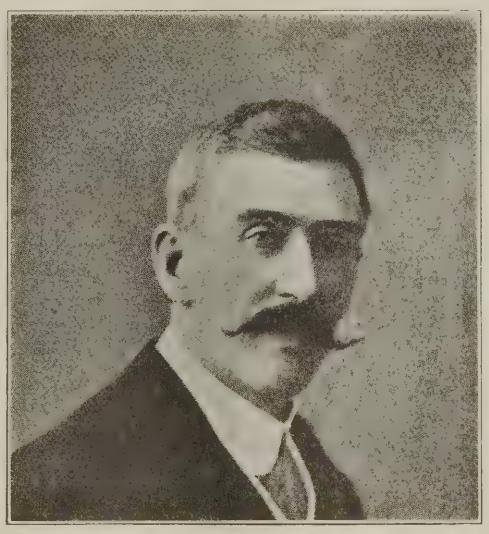
MEDICINE IN INDIA

To those interested in the present and the future practice of medicine in India, it is well to suggest a

review of the significant paper Some Aspects of the Future of Medicine in India, by Major-General Sir Gerald Giffard, K.C.I.E., C.S.I., I.M.S. (Retd.), which appeared in the *Asiatic Review* of January, 1925, and from which the succeeding statements have been derived. Medicine in India is largely a government department, i. e., made up of government servants more or less bound up with the army. To this may be added a growing body of private practitioners and a considerable number of missionaries medical men and women. The public health service, medical college, hospital and research institutes are almost all state supported institutions.

There are three systems of medicine in vogue in India. Western medicine, with its free and open features as becomes any scientific pursuit where the search for truth and progress is predominant.

The unprogressive, decadent and somewhat secret Ayurvedic, or Eastern, or Hindu, and Yunani, or Mohammedan systems. Thirty years ago these systems, which are referred to as "vestigial remnants of medical knowledge of two to two thousand years ago," were about to disappear before the advent of European medicine, but now they are being revived in that a large Ayurvedic school has been founded in Delhi, with smaller ones in the provinces. Not alone were they founded, but they received the personal support of the viceroy and provincial governors, as well as the almost unanimous support of the Indian politicians. Furthermore, the local governments have voted money for the Ayurvedic and Yunani systems and have subsidized their practitioners." It is unfortunate that the three systems cannot meet and expose their points good and bad, with the adoption of the good in each and the rejection of the bad in each. It illustrates the chasm that exists between the Occident and the Orient, and the difficulties of bridging this chasm.



SIR LEONARD ROGERS

"From this it seems that the future medicine in India, if not more or less in conflict, will at least be in a mixed up state. With this as the outlook it is all the more important that Western medicine should be represented in its most effective manner. That the Oriental systems are not brought in comparison with an inferior grade of medicine," which is one of the most effective points which Sir Gerald makes and at the same time leaves the reader somewhat of the opinion that this very thing is not only happening but that British India is somewhat reluctant to make provisions sufficiently liberal to secure an efficient representation of Western medicine.

Such a belief we are afraid will be concurred in by many travelers who are already inclined to express themselves with being more impressed by the "Unpaid debt of Great Britain to India," than any debt which India may be said to owe to Great Britain. Or in other words that the British Indian government does not spend as much of India's producing revenue upon India as it should.

In Calcutta is located the School of Tropical Medicine and Hygiene, in connection with the Carmichael Hospital for Tropical Diseases. It is a splendid institution and a monument to the genius of Sir Leonard Rogers, through whose efforts its existence was accomplished. It is ably conducted by an efficient and enthusiastic head, Lieutenant Colonel J. W. D. Megaw, I.M.S., and supported by an equally enthusiastic and efficient corps of coworkers. The school for tropical medicine should never have been in London, which is as remote from its real field of usefulness as possible, and deferring its existence in India until four years past was equally an error. The importance of this institution to India, and everyone in India, European and Native, is unmistakable. Possibly no other institution does such valuable and necessary work in scientifically directing the public health movements, in training and distributing doctors of public health, in supplying a central bureau to which unusual cases and conditions can be referred for investigation. Lastly, in aiding the advancement of the science of tropical medicine and the study of the partially developed pharmacology of India. Valuable as this institution is, it is obviously in need of funds. In no way can British India better invest its rupees than by providing ample funds for the fullest development of its activities. Since the revenue of this country is an enormous one it would not be unfair to expect more of its revenue to be spent where it is produced. Or since its labors favorably influence all of mankind, it would afford a splendid opportunity for endowment to any philanthropic agency elsewhere.

The commoner tropical diseases are the malarias, plague, cholera, leprosy, beri-beri, kala-azar, uncinariasis, amebic dysentery, filariasis, the various forms of trypanosomiasis, and other protozoal infections, together with the mycotic skin disturbances common to the tropics. Although India is burdened with a generous variety of tropical diseases, it should not be overlooked that her share of the diseases common to the temperate zones unfortunately remained undiminished.

The patients that enter the Carmichael Hospital, as a rule, come not with one disease, or one form of infection, but usually with two or more infections, hence, each case requires individual study to determine the existing infections.

The opinion was expressed that the socalled racial immunity of the native was largely a myth, and, that instead we had an immunity acquired in infancy through exposure to the various epidemics, i. e., the adults to a large extent representing the survival of

Main Entrance to the Medical School Group, Peking Union Medical College

the fittest. In this there is likely an element of reason, but many will contend that there is not enough to justify the complete dismissal of racial immunity.

Through overfeeding, the fondness for sweets, and the Oriental habit of selfindulgence, the rather amusing expression has become current that "an Oriental who has not sugar in his urine by his forty-fifth year is not fashionable." Whether this is the explanation of the prevalence of glycosuria in the Semitic race in the West is a question.

Water as used in the cultivation of rice, their principal food, unfortunately fulfills the ideal breeding conditions for the mosquito. Where the rice paddies do not exist there are enough stagnant pools and other large and small collections of water that will serve as equally favorable substitutes. With the prevalence of the mosquito, the sand fly and other intermediate hosts, and the free and close intermingling of the thousands not alone from one part of a city to another, but from one part of the country to another, so common through their religious pilgrimages, we have the most perfect conditions for the development and the spread of epidemics so common in this country.

Kala-azar, also known as black sickness, dumb-dumb fever, a form of Leishmania, received its first recognition in the early eighties in Assam, the tea district. In the beginning it was confused with certain severe types of malaria, with which it bears some degree of clinical resemblance, until the parasite was discovered by Leishman in 1900. From Assam, it spread to Bengal, Madras, Ceylon, the Dutch East Indies and the other oriental countries. The mortality in Assam, in 1897, has been placed at 18,000. The means of transmission is still unsettled. The diagnosis is confirmed through splenic puncture and the positive finding of the Leishman parasite. It may remain symptomless for some time until its existence becomes manifested through a provocative attack of typhoid or malarial fever. In the year 1923, in the outpatient department of the Carmichael Hospital, there were 1,117 cases in a total attendance of 15,997. A statement of a definite advance in the treatment has been made by this hospital through the introduction of metachlorparaacetylaminophenyl stibiate of sodium, von Heyden, No. 471.

Through publicity many of us have been trained to think of leprosy in connection with the Hawaiian Islands, as if these islands were the centre of this disease instead of merely one of the outposts of the other leper infected parts of the world where the infection is more widely distributed.

The prevalence of this disease in countries like India can be appreciated by the fact that the skin department of the Carmichael Hospital has demonstrated the existence of leprosy in fully fifteen per cent. of the cases applying for the treatment of skin infections. It exists not alone in the partly dressed, barefooted coolie but likewise in the middle class, merchant, official and professional element, in fact, the servant or individual with whom you may be brought in closest contact may be a leper without your or his knowledge of its existence.

In this same hospital it is believed that the diagnosis can be made through clinical signs before it becomes infectious or the bacteriological examinations are positive. The outlook is hopeful in the early diagnosis and treatment. Chaulmoogra and hydnocarpus oils are the favorite remedies. In Sumatra, injections of thymol in olive oil have found favor.

"In cases which do not yield to any single form of treatment we recommend a triple combination, viz., injections of fifty per cent., hydnocarpus esters in pure olive oil, the solution containing also ten per cent. thymol; potassium iodide orally in small doses rising to large doses as long as there is no reaction; the local application of a twenty to thirty per cent. solution of trichloracetic acid in distilled water with a glass rod covered with cotton wool, applications being made at intervals of from seven to fourteen days to all skin lesions." *Carmichael.*

The Punjab became known to ophthalmology through the operative work of Doctor Smith, of the I. M. S., retired, and more generally known as Jalandhar Smith, after his former residency.

He performed the intracapsular operation and according to current reports as much or more cataract surgery was performed here as in any other part of the world. India of old has been associated with plastic surgery through the Indian methods of rhinoplasty. The cutting off of noses and ears was an ancient method of punishment not entirely confined to India, but became generalized somewhat in the Middle Ages. With the abatement of this form of mutilation we have a new disfiguring force through the destructive sequelæ that attend kala-azar. These disfigurements are common to the cheeks and mouth, necessitating the reconstruction of the mouth. As the past gave us an Indian method for the reconstruction of noses the present may give us an Indian method for the reconstruction of mouths.

Terrace and Portico of Anatomy Building, Peking Union Medical College

BURMA

Although a part of the present British Indian Empire, or more correctly speaking an addition thereto is not Indian in any sense. In every way the Burmese differ widely from the Indians. Rangoon, the chief and most accessible city is located on the Rangoon River about thirty-four kilometers from the Bay of Bengal. This swiftly flowing stream, with its numerous Oriental types in their native sampans, afforded an unfailing interest. With the usually added gorgeous sunsets life upon this stream became a pleasant experience notwithstanding the intense solar glare. Rangoon has a population of about 300,000, which is divided, religiously speaking, into about one third Buddhists, one third Hindus, one sixth Mohammedan and the remainder mixed Christians. Ethnologically, the division is more varied, with the men three fourths more numerous than the women, and the predominant strain Mongolian.

The General Hospital, on Commissioners' Road, is one of the best hospitals in the British Indian Empire. It is constructed of brick, built in units, several stories high, which are connected with one another through corridors of several stories that are screened with a strongly constructed screen with an unusually large mesh, merely as a protection against the entrance of bird life, particularly the crows, which are both numerous and aggressive. The air is kept in motion through slow, steadily moving punkahs, driven by electricity. With its cool marble tiling, the splendid facilities for ventilation supplemented by the punkahs, it provides a comfortable type of hospital even though located in a torrid spot.

There are 450 beds and an English nursing staff with a training school for Burmese girls. The nursing curriculum extends over three years with a special course in maternity. The fee for trained nurses that generally prevails throughout India and Burma is five dollars for twelve hour duty. In their surgery chloroform is the anesthetic of choice. Gastro-enterostomy is the operation of election for ulcers.

From Rangoon our course was along the Burmese Coast, to the Island of Penang, where the inhabitants numerically are more than half Chinese; many of these are extremely wealthy and not afraid to display their wealth. This island, and the view from Penang Hill, represents a tropical paradise, of which there are but few equals. From Penang we ferried to the mainland, the Malay Peninsula. Passing through the Malay States to Singapore was like a journey through a gorgeous botanical garden filled with the rarest of tropical vegetation.

Singapore, Colombo and Hong Kong are what an Englishman would call the Clapham Junction of marine traffic, where ships come and go as frequently as trains arrive and depart from a Union Station in a metropolitan centre; and where the people are as varied as the races that inhabit the globe.

JAVA

From Singapore to Java is a sail of less than two days, and to leave Penang and Malay to pass to Java is merely swapping one fairy land for another. The principal hospital of the island is in an outlying quarter of the European part (*Weltevreden*) of Batavia. It is a splendidly constructed hospital, built in sections and connected with one another by covered

passages, paved with highly glazed tiles. The hospital is a one story structure throughout, presumably as an earthquake precaution, and covers such an area that bicycles are used in moving along the passages from one section to another. It has an elastic capacity; in an emergency through the use of the passages it may be expanded to more than a thousand beds. In every detail it is extremely modern and the whole arrangement a distinct credit to the Dutch Colonial Government.

The hospital is in connection with the medical school, where the native students, who number between three and four hundred, are trained for service throughout the numerous Dutch East Indian islands. The curriculum extends over a period of seven years, the last being spent in the hospital.

Hepatic cirrhosis was as common here as in the West, but not dependent as in the West upon the alcoholic intake. Here it is due to the consumption of highly seasoned food which is a craving common to hot countries. Stab wounds and slashes made into the abdomen with short swordlike weapons testify to the frequency and intensity of their quarrels and verify the fact that these weapons are carried for distinctly useful and not ornamental purposes.

The frequency of vesical calculi in the natives of hot regions can be explained upon a basis of the concentrated urine owing to the limited intake of water and the excess of the output through diaphoresis. The calculi in the European is more likely renal in origin. Kala-azar, cholera, plague and leprosy were said to be comparatively rare in Java, as compared with India. Referring to beri-beri, disclosed a difference of opinion as to its causation. The more general view attributes it to the consumption of too highly polished rice through which the rice had lost the water soluble B, or antineuritic vitamine. Others especially in India believe it to be due to the improper storage in damp and hot *godowns* or warehouses. Storage under improper conditions, it is believed, favors the development of a poison in the rice of microbial origin not unlike, it is said, to the development of pellagra through the use of diseased maize.

As India yields the nux vomica so Java the cinchona bark, and for these reasons a large proportion of strychnine comes from India, and during the World War, the world's output of quinine largely if not altogether came from the factory in Bandoeng.

INDO-CHINA

From Colonial Dutch to Colonial French means going from Java to Indo-China. Saigon, the chief city, like Rangoon, is inland a distance of about sixty kilometers from the coast on the Saigon River. This tortuous stream with its low banks reminds one of our own Missouri River that is here today, but that looks as though it may be elsewhere tomorrow. Its numerous and equally tortuous tributaries with their strong tides solve the major part of the local transportation problem. Looking across this flat country one sees the sails of a sloop or a sampan that strangely seemed to be coming through a rice paddie, instead of sailing upon the surface of a hidden river.

The city is distinctive through the miles of shade trees, a species of tamarind, the branches of which form Gothic arches across the streets. It was never made clear as to whether the planting of these trees had for its object the beauty of the city, and the comfort of its citizens, or a more utilitarian purpose of adding to the permanency of the city by insuring it against the encroachments of the river.

One of the two principal hospitals is located within the city. This is mainly for the European population and the military, in fact, it is called *L'Hôpital Militaire*. The other is located a few miles outside of

Class in Carmichael Hospital

the city, and is reserved for the native population. It is called *L'Hôpital Cholon.* Through the courtesy of Dr. Lecomte, *directeur local de LaSante de Cochinchine,* both hospitals became accessible. *L'Hôpital Cholon* afforded some interesting material. This hospital is being gradually rebuilt. The surgical service is under the direction of Dr. Lalung Bonnaire. Spinal analgesia including high injections is practised. Just the reverse of the Militaire, where general anesthetics are employed with ether as the preference. Splenic ruptures, cases of which were shown, are common here owing to their enlargement and friability through tropical infection mainly malarial. The patella fractures were wired and prompt active joint motion insisted upon to prevent stiffness and atrophy. Gastric ulcers were subjected to gastroenterostomy. For several days prior to the operation gastric lavage with an antiseptic solution and after the operation antipneumonic serum were routine procedures in this hospital.

CHINA

Of the hospitals in China space permits only a brief reference to one—the Peking Union Medical College and Hospital. To encounter a replica of the Johns Hopkins Hospital dressed in the most attractive Chinese garb, in this oriental setting, with its cultural background, which the past so richly and distinctively affords, comes to a traveler as indeed a great surprise.

It cost including the land about five million dollars gold, and it requires almost a million dollars annually for the maintenance of both college and hospital. The funds, if not entirely, are mainly derived from the Rockefeller Foundation, and the standards are those of the Johns Hopkins Hospital and University throughout. This institution is incorporated not in China but in New York State.

It serves as a standard where a standard has been sorely needed, it affords the best of opportunities for training Chinese men and women in the medical and

nursing profession, it provides the Chinese with an entirely new viewpoint regarding the Western civilization and lastly, a centre for advice and assistance where formerly this was almost unknown. While the hospital was built in behalf of furthering Chinese interests Europeans are not excluded. We wonder how many of the Europeans can accurately appreciate the immense importance of having such a modern institution within easy reach in a country like China in time of need.

Those in charge of its construction wisely retained the most attractive of the Chinese architectural effects and decorations, in fact, the main entrance we are told represents the palace of a Manchurian prince with but limited variations.

The head of the department of surgery is Dr. Adrian S. Taylor, a native of Alabama, with a Johns Hopkins training.

Seeing the Chinese and Europeans so enthusiastically working together brings home in a forcible manner the internationalism of the sciences and the arts, and makes one regret that this same internationalism which spells the real brotherhood of man cannot be broadly extended to other divisions of human activity and relationship. Much as we clamor for and cling to our nationalism the conclusion is irresistible that in the end, although it will be in the far distant future, we will be obliged to bury our dear nationalism, for until then there will be no real progress of the whole human race such as we pretend that we would like to see and to have seen.

JAPAN

Reaching Japan, via Manchuria and Korea (Chosen) we visited the hospital of the Imperial University of Tokio. Like most Japanese structures it is mainly built of wood, and of one story. You park your shoes at the entrance, receiving the customary check and a pair of sandals. The Germanic influence here as elsewhere is quite perceptible.

SURGICAL CLINIC IN A JAPANESE HOSPITAL

Through the kindness of Professor H. Shihota we attended a surgical clinic that consisted of two appendectomies and one gastric resection. The anesthesia in all was pantopon and scopolamine, supplemented with local infiltration of novocaine. If the three subjects had been cadavers they could have given no more evidence of pain or sensibility than did these patients. In all the hands were tied and a large red cloth fastened over their eyes. The selection of a transverse incision, and the elimination of a general anesthetic in the gastrectomy afforded evidence of the reaction which the Japanese display towards every advance which modern progress affords. The substitution of the transverse for the usual vertical incision except in the median line has so many advantages and has the support of some of the ablest surgical judgment that it is to be regretted that its more general adoption has been so slow. This is, perhaps, an evidence of how habit limits and enslaves the most of us. The continuity of the resection was reestablished by the Billroth I, with an easy and secure restoration. The operation was throughout deliberate and accurate, the blood loss minimum, and the time as short as efficient surgery justifies.

844 Fourth Street.

Letters to the Editor.

A STEP BACK IN MEDICAL EDUCATION

Philadelphia, Pa., *December 10, 1925.*

To the Editor:

On December 9, 1925, the Philadelphia County Medical Society held a "medical education" meeting in the auditorium of the William Penn High School. The drawing card was Dr. William Allen Pusey, of Chicago, former president of the American Medical Association. The speakers included Dr. Charles W. Burr, Dr. David Reisman, Dr. John A. Kolmer and the Hon. William Potter, president of the Board of Trustees of the Jefferson Medical College. The evening was damp and chilly and the auditorium spacious and slightly heated, with the result that there was a small attendance composed chiefly of medical students, nurses and doctors.

The subject announced for discussion, namely, medical education, had attracted me and I hoped to hear something new and elevating in medical pedagogy, but to my great chagrin and disappointment, I sat listening to a tirade against modern high educational requirements made by medical schools both premedically and by curriculum. Such philippic was made by no less an authority than Dr. Pusey, who pleaded for an increase of medical practitioners in the rural districts and blamed the high requirements of medical colleges as responsible for this paucity. The learned professor, who was chairman of the Curriculum Commission on studies standardization for medical students, was of the opinion that too much time is devoted to laboratory subjects to the detriment of clinical subjects. He would materially reduce the number of hours devoted to these basic subjects and abolish research work altogether by students. The premedical requirements in his estimation should be abolished; students taken directly from high schools; admitted to colleges and graduated after four years, three of which should be given to study and the last year spent in internship at a hospital. This, according to Dr. Pusey would solve the shortage of practitioners in the rural districts without resorting to state aid or medical socialism. Dr. Burr, who followed Dr. Pusey, endorsed the statements of his predecessor and praised the old time preceptor, finding fault with the modern intern who considers his patients as "things to be studied" not even as human animals. Some interns, according to Dr. Burr, are at a complete loss without laboratory assistance. Because of this very clinical ignorance the doctor would further reduce premedical and medical studies!

Dr. Reisman pointed out that the country should make the invitation and stay of practitioners more attractive if it desires local doctors.

Dr. Kolmer advocated the granting of a science degree at the completion of the second year of medicine so that those especially inclined to scientific studies would be able to follow a strictly scientific career, as contrasted to the medical practitioners who are to heal the sick.

Mr. William Potter, as a layman in contact for many years with the profession at the Jefferson Medical College, pleaded for the retention of the

family physician against the wave of specialization.

Dr. James M. Anders presented a resolution for the reduction of the present medical students' educational requirements. Finally Dr. C. A. Morgan, president of the Philadelphia County Medical Society, in his genial way made a few closing remarks endorsing the speakers of the evening.

The meeting was adjourned and thus ended a highly pedagogic discussion in which the key note was medical regress to suit the rural district's demands. The impression on me, especially after hearing my former professors, Anders and Morgan, was perfectly demoralizing to say the least. To hear these dynamic teachers who had transformed a good medical under-graduate school into a post-graduate institution in order to meet the growing demands of a higher education, as going on record for poor medical training seemed a most contradictory state of affairs.

Why reduce the medical standard when medical schools deliberately limit the number of students to about one hundred per class? I understand the University of Pennsylvania and the Johns Hopkins University adhere to this limitation. The number of candidates desirous of entering the medical portals would be legion were it possible to be admitted. It is objected that the laboratory facilities are limited and the chairs of these departments advocate a reduction of students. But if the need for the rural district's practitioners is of such impressive demand, would not state aid solve the financial burdens of the medical schools in providing for adequate accommodation for laboratory instruction?

Why reduce the laboratory work so important to just such prospective country physicians who are to depend on this very assistance for diagnosis?

If the present day intern (according to Dr. Burr) is so palpably deficient in clinical understanding, would he by a curtailment of his medical equipment become more proficient? Should we in the present state of civilization in the east adopt ourselves to the demands of the mountains of Kentucky? Dr. Burr wisely remarked that there are many stages of civilization on this Continent as there are states but without definite state lines. Would it be advisable for us to reduce our medical standards and lower ourselves to the level of inferior civilizations? Would it not be better to raise the popular educational standards in our Great Republic and at the same time keep our medical education on a high plane?

Frankly, I do not see the criterion for reduction of medical requirements to meet the shortage of country physicians. The Rockefeller Foundation is correct in attributing this paucity of rural physicians to social and economic conditions. There is a city ward phenomenon familiar to all of us. The urban attractions are strong for the farm hand, the country youth as well as for the ambitious young physician who is also susceptible to human and environmental influences. If the country were made really attractive to the physician both intellectually and financially, more practitioners would flock to the rural sections. But such attraction is dependent upon so many social and economic factors that medical pedagogy is impotent to solve. The same phenomenon is observed abroad and this in my estimation has given much impetus to state medicine.

American Medical Educational standards should at least equal if not surpass the Continental standards in advanced European countries such as Italy, England, Germany and France, in which a collegiate degree is a requisite to the study of medicine, which extends over a period of six years. The medical profession there is highly honored and esteemed. Doctors occupy high positions in the political and intellectual life in their respective countries. America has advanced by leaps and bounds industrially. Great industrial geniuses and experts have arisen. American medicine should keep pace with this developmental achievement. There is no better intellectual force than that constituted by the medical profession, which should not only be represented by a few towering medical intellects but by the aggregate proficiency of its members.

Let us no longer talk of detracting from medical instruction. It is a known fact that European physicians look upon our diplomas with some degree of doubt and not infrequently express or show American tourists or medical delegates their suspicion on American medical preparation. Aside from the chief function of the family physician "to heal the sick, reduce fever, set the fracture, and bring the darling baby into the world without injury to the mother and child," the doctor must impress his patient with his thorough medical equipment. We have already too many doctors whose general education in history, classics and medicine falls below par. The public is catching up to it and not infrequently compares the medical man with his "doc" of the drug store and the "docs" of the various cults. If our great medical men are on the eve of committing themselves to lower medical standards, it is proper that we direct our children to careers giving them more culture and intellectual development.

Leopold Vaccaro, M.D.

News Items.

Herter Lectures.—Dr. B. Brouwer, professor of neurology of the University of Amsterdam, will deliver the annual Herter lectures of Johns Hopkins University, in April.

Medical Films.—The U. S. Public Health Service has prepared films showing the lesions of syphilis and skin diseases simulating syphilis. The films are not for sale, but will be released to state boards of health for the use of medical societies, schools, and hospitals.

Harvey Society Lecture.—Edward B. Wilson, Ph.D., professor of vital statistics of the Harvard School of Public Health, will deliver the fifth Harvey Society Lecture at the New York Academy of Medicine on Saturday evening, February 6th, his subject being Empiricism and Rationalism.

Devoto Prize.—A fund has been collected to found an international prize in the name of Professor L. Devoto, who recently completed twenty-five years of medical teaching in Milan, and who was the founder and director of an occupational disease clinic. The prize will be awarded biennially for the publication contributing the most to the pathology of occupational disease, by the Milan Academy of Sciences.

Scholarship for Surgical Study.—The J. William White scholarship in surgery for foreign graduate study has been established, the award to be made by the trustees of the Mayo Properties Association. The funds were provided by a legacy from Dr. White, who was formerly professor of surgery at the University of Pennsylvania.

Leslie Dana Medal.—Nominations will be received until March 15th by the National Committee for the Prevention of Blindness, for the annual reward of the Leslie Dana Medal. The considerations are special discoveries, social service in the control of eye diseases, research and instruction, or long service in conservation, of vision or the prevention or cure of eye defects.

Graduate Course in Paris.—An international clinic of otorhinolaryngology and faciomaxillary surgery, for graduate instruction, will be held from May 15th to August 12th at the St. Louis Hospital, Paris. The chief of staff will be Dr. Fernand Lemaitre, of Paris, and the associates are Dr. Harold Delf Gillies, of London, Dr. J. Eastman Sheehan, of New York, and Dr. Ferris Smith, of Grand Rapids, Michigan. Americans should make application to Dr. Sheehan, New York.

Civil Service Examination.—Applications for positions as medical officers, of five grades from junior to senior, will be received by the United States Civil Service Commission, Washington, up to June 30th. The appointments will be for vacancies in the Public Health Service, the Coast and Geodetic Survey, the Panama Canal Service, and the Veterans' Bureau. Entrance salaries range from $1,860 to $5,200, with promotions to $2,400 and $6,000.

Applications for position as medical intern (psychiatric) for duty at St. Elizabeth's Hospital, Washington, D. C., and similar vacancies, will be received by the United States Civil Service Commission, Washington, up to June 30th. Graduate medical students or seniors about to be graduated are eligible. The salary at St. Elizabeth's will be $1,860, without allowances.

Midwinter Course in Gastroenterology.—Two additional courses in gastroenterology to meet the increased demand for instruction, have been arranged by Columbia University, to be given at the Vanderbilt Clinic, beginning January 26th; the second series will begin on March 23d. The preliminary course in gastroenterology will be given by Dr. John Leonard Kantor. This is a course of lectures and röntgen ray demonstrations, designed for graduate students of medicine. The lectures are in three groups, the first covering the nature of digestive disorders, diagnostic methods, therapeutic methods, and organic and functional constitutional inferiority; the second group includes lectures on systemic diseases of the digestive tract; and the third group includes the röntgen ray demonstrations. These demonstrations may also be taken without the other lectures. The practical course is under the direction of Dr. Kantor and Dr. Zachary Sagal. The first course, or its equivalent, is a prerequisite. The work consists of clinical and laboratory procedures and diagnostic methods, and each student will have opportunity to observe, assist with, or perform the methods discussed.

Personal.—Dr. H. Brooker Mills, of Philadelphia, announces the removal of his office to the Medical Arts Building, at Sixteenth and Walnut Streets.

Dr. Charlton Wallace has been appointed attending orthopedic surgeon at the Hospital for the Ruptured and Crippled, New York.

Dr. Frank W. Shipman has been appointed health officer, for life, at Mount Vernon, New York. He succeeds the late Dr. William H. Purdy.

Mr. Albert W. Buck, since 1924 acting superintendent of Johns Hopkins Hospital, has been appointed superintendent of the New Haven Hospital, New Haven, Connecticut. Dr. Willard C. Rappleye has resigned from this position to become secretary of the committee on medical education of the Association of American Medical Colleges.

Two new appointments as health officers in the Baltimore City Health Department are Dr. Charles A. Cahn and Dr. Nicholas W. Pinto.

Dr. William H. Pound has been appointed deputy health commissioner of New York.

Dr. Herman Van Horn, formerly on the staff of the Dartmouth Medical School, Dartmouth, New Hampshire, will teach embryology at the Wittenberg College, Wittenberg, Ohio.

Dr. Carey J. Vaux has been appointed director of public health of Pittsburgh, Pennsylvania.

Dr. Willis B. Merrill, of Columbus, Ohio, has been appointed chief physician at the Ohio State Penitentiary.

Dr. Benjamin H. Hager, of the University of Wisconsin Medical School, has resigned to become a member of the staff in urology at the Mayo Clinic.

Dr. J. F. Montague, of New York, addressed the Berkshire County Medical Society in Pittsfield, Mass., on January 14th, his subject being Popular Fallacies Concerning Hemorrhoids.

Dr. John F. Bresnahan, of the James K. Jackson Memorial Hospital, of Miami, is the new superintendent of St. Mark's Hospital, New York. Dr. Jesse L. McElroy, the former superintendent of St. Mark's, is now superintendent of the University of Iowa Hospital, Iowa City.

Dr. John H. Gibbon, president of the American Surgical Association, gave the Hodgen Lecture of the St. Louis Medical Society, on Mobilization in the Treatment of Fractures.

Dr. Archibald K. Benedict, of Sherburne, New York, has been appointed superintendent of the Chenango County Sanitarium, in place of Dr. D. U. Gould, who resigned.

Dr. John J. Lloyd, who has been medical superintendent of the Monroe County Tuberculosis Sanitarium, Rochester, New York, for several years, has resigned in order to devote his time to private practice.

Dr. George H. Ramsey, of the state department of health of Michigan, is spending six months in study at Johns Hopkins University Medical School.

Dr. Thomas Dwight Sloan, formerly medical superintendent of Peking Union Medical College Hospital, Peking, China, will be the new associate director of the Lakeside, Maternity and Babies' Hospitals of Cleveland, with special connection with Lakeside.

Society News and Notes.

The Audubon Medical Society held its first annual dinner at the Hotel Biltmore, New York, on January 21st. The guest of honor at the dinner was Dr. Theodore K. Tuthill, who has been practising in the city for fifty years.

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The Association of Alumni of the College or Physicians and Surgeons of the City of New York held its annual meeting on January 28th. Dinner was followed by an address by Dr. George A. Soper on the subject of Typhoid Mary.

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The Medical Association of the Greater City of New York met on January 18th at the New York Academy of Medicine. The papers of the evening were on Alveolar Abscesses, by Dr. H. J. Kauffer, and Diagnosis of Focal Infection, by Dr. Judson Daland of Philadelphia.

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The Tuberculosis Preventorium for Children held its annual meeting on January 19th at the New York Academy of Medicine. Officers elected for 1926 are: Bradley Martin, president; Mrs. Henry Phipps, first vice president; Mrs. Lewis Thompson, second vice president; Dr. Alfred F. Hess, secretary; Alexander S. Webb, treasurer; Marcus M. Marks, honorary president.

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The American Society for the Control of Cancer has removed its headquarters to 25 West Forty-third street, New York city.

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The eighth annual meeting of the Western Physiotherapy Association will be held in Kansas City, April 15th-16th, under the presidency of Dr. A. David Willmoth, of Louisville, Ky.

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The New York Heart Association and the New York Tuberculosis and Health Association have merged better to carry on their activities. Dr. Haven Emerson has for many years been president of the Heart Association.

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A conference was held in New York on January 13th under the auspices of the Child Study Association of America.

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The Eyesight Conservation Council of America has reelected Lawrence W. Wallace president for 1926.

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The Bureau of Clinical Information of the New York Academy of Medicine has for distribution the identity cards which the American Hospital in Paris has prepared and suggested that Americans carry with them while travelling abroad.

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The Metropolitan Medical Society of New York has elected the following officers for 1926: Dr. Lewis Carp, president; Dr. Joseph Felsen, vice president; Dr. Morris Grossman, treasurer; Dr. Theodor Blum, recording secretary; Dr. William Rosenson, corresponding secretary; executive committee member, Dr. S. Philip Goodhart.

The Yorkville Medical Society met on the same evening. The papers of the evening were on the Significance of Cholecystography and Comparative Studies after Oral and Intravenous Methods, by Dr. I. O. Palefski; Considerations on the Pathology and Diagnosis of the Diseases of the Liver and Biliary Tract, by Dr. Joseph S. Diamond; and Surgical Aspects of Diseases of the Liver and Biliary Tract, by Dr. A. A. Berg.

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Announcement has been made by the American Jewish Association for the Blind of New York of the probable purchase of a building to be used as an orthodox Jewish home for aged blind couples. The property is on Avenue B between Eighth and Ninth streets, opposite a park.

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The Society of Medical Jurisprudence met on January 11th at the New York Academy of Medicine. Dr. Matthias Nicoll, Jr., spoke on Some Inconsistencies in the Public Health Law and the Difficulties in Administering It; Dr. George W. Whiteside discussed the proposed new medical practice act. Among other speakers were Dr. Thomas C. Chalmers, Dr. Walter Jeffrys Carlin, Dr. John E. Jennings, Dr. Nathan B. Van Etten and Dr. John Kirkland Clark.

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The *Société de Pathologie Exotique* of Paris elected to honorary membership at its December meeting Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research.

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Prominent visitors in New York recently were Dr. Richard Müller of Karlsbad, Dr. Adolf Lorenz of Vienna, and Dr. Alonzo Milton Nodine of London, who is observing dental and stomatological teaching conditions in the United States. Dr. Nodine is a member of the organization committee of the British Stomatological Association.

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With its exhibit on the history of appendicitis, the library of the New York Academy of Medicine is showing also material on the anatomical art of Leonardo da Vinci.

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The American Academy of Physiotherapy held a special meeting in New York on January 5th.

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Dr. Adolf Meyer, professor of psychiatry at Johns Hopkins University, will deliver a lecture on Individualism and Mental Health at the New York Academy of Medicine, at 4 o'clock on the afternoon of February 9th. On February 16th, at the same hour and at the same place, Dr. C. Macfie Campbell, professor of psychiatry at Harvard Medical School and director of the Boston Psychopathic Hospital, will speak on New Concepts of Mental Health.

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The New York Lecture Bureau has announced for January and February, 1926, a series of interesting lectures by Dr. Israel Weinstein. Dr. Weinstein lectured in January on Lord Lister, Elie Metchnikoff, Charles Laveran and Ronald Ross, Edward Jenner and on various subjects related to medical science. The February lectures will include Robert Koch, Louis Pasteur and Elie Metchnikoff.

Book Reviews

THE FOOT

Diseases and Deformities of the Foot. By John Joseph Nutt, B.L., M.D., F.A.C.S. Second Edition. New York: E. B. Treat & Co., 1925. Pp. 290.

This book is written for the general practitioner and it is decidedly worth while. So many cases of foot weakness and strain come under the general practitioner's care that it is impossible to send all of them to an orthopedist. The first portion of the book is taken up with anatomy and physiology which well covers the question of foot strain, walking, etc. His description of the proper treatment for weak arches is excellent. The reviewer is glad to see that he gives adequate exercises for the development of the plantar ligaments. It is surprising that one could take up the question of deformities of the foot and develop such an interesting, practical work.

MINOR SURGERY

Minor Surgery. By Lionel R. Fifield, F.R.C.S. With 273 Illustrations. New York: Paul B. Hoeber, Inc., 1925. Pp. 431.

It is rare that a book of minor surgery sticks to minor surgery and does not turn to major operative surgery. This little book is well illustrated with charts, diagrams and photographs of apparatus, etc.

In general the author has taken up exceptionally well the minor surgical operations that come to the general practitioner.

If any criticism might be offered it would be that the item of fractures of the long bones does not really come under the classification of minor surgery. Fractures of the femur and humerus are in reality hospital cases, which demand exceptionally good major surgery judgment in order to return the patient to a satisfactory economic position.

We believe that it does not give enough space to treatment of infections of the hand, as these injuries so often lead to stiff hands where the owner is not able to return to a satisfactory economic livelihood. In general, however, this work should prove exceedingly valuable to the general practitioner.

PROTEIN REACTION

Allergy, Hay Fever, Urticaria, and Allied Manifestations of Reaction. By William W. Duke, Ph.B., M.D. With Seventy-Five Illustrations. St. Louis: The C. V. Mosby Co., 1925.

Few subjects are as interesting and, one may add, as baffling as that of the excessive reaction of the organism to protein, whether ingested in the usual way or finding its entrance into the economy parenterally. As the author points out, the evidence of hypersensitivity may be presented in practically every tissue and every organ, and simulate in any locality the manifestations of functional or organic disease.

This particularly important topic has been presented by Duke on the basis of a careful clinical and laboratory study of over five hundred cases and is considered mainly from the viewpoint of the internist. In every case, the minimum routine included a careful and complete medical history and physical examination, uranalysis, study of a blood smear, a quantitative Wassermann test, and radiographs of the teeth. Even this was supplemented, when it seemed desirable, by studies in blood chemistry and metabolism, by radiographs of the nasal sinuses, chest, and other regions, and, of course, by specific tests of protein sensitization, either individual or in groups.

Part I of this uncommonly interesting and very timely work discusses experimental anaphylaxis, serum sickness, bacterial allergy, pollinosis, and reaction to animal and vegetable emanations. The symptoms and diagnosis of the general reaction, as well as the specific diagnosis, are treated at length, and also the specific, nonspecific, and symptomatic treatment. In Part II there is a thorough study of excessive reaction to physical agents, light, heat, cold, mechanical irritation, and, not least important, mental and physical fatigue.

If any criticism were to be offered it would be that the illustrations, particularly those of pollinating plants, are on much too small a scale, and those of the history and physical examination charts are very indistinctly printed as well, so that it is almost impossible, even with the aid of a magnifying glass, to decipher the various headings.

PREVENTIVE MEDICINE

Health Through Prevention and Control of Diseases. By Thomas D. Wood, M.D., College Physican and Adviser in Health Education, Teachers College, Columbia University, and Hugh Grant Rowell, M.D., Physician, Horace Mann Schools, Teachers College, Columbia University. Yonkers-on-Hudson, New York, Chicago: World Book Company, 1925. Pp. vi-122.

The subject of the preservation of health by means of the prevention and control of disease is receiving attention more and more. This book is devoted to the methods available for making the school, which is a prolific source of disease, a health centre. Such methods occupy an important position in the reduction of the mortality of the school age. The plan outlined is intended to aid teachers, school officials, school physicians, and school nurses, as well as parents, so that the latter may coöperate more intelligently with the school authorities.

The exclusion of a child from school after the symptoms of a contagious disease are already developed serves no useful purpose from the viewpoint of community health. The pupil should be excluded from school on the slightest suspicion and not after the diagnosis has been made, when, as a rule, the damage has already been done. This is the keynote of the whole book. The responsibility for the diagnosis of disease is preeminently the domain of the physician, but nevertheless the school principal, teacher, nurse, or doctor may exclude pupils who develop certain well recognized initial symptoms of contagious disease. The readmission of the pupil after convalescence from a contagious disease under certain restrictions is also an important part of the program.

The various aspects of this question are discussed in great detail, giving specific instructions. The contagious diseases, their methods of recognition and prevention, are described, as well as the standards for

exclusion and quarantine. A chapter is devoted to answers in the form of a catechism, to questions that parents may ask, and one to definitions and explanations.

This book fills a long felt want in the field of school hygiene and no school official of either the teaching or school nursing staff should be without it.

INTRAVENOUS THERAPY

Intravenous Therapy. Its Application in the Modern Practice of Medicine. By Walton Forest Dutton, M.D., formerly Medical Director, Polyclinic and Medico-Chirurgical Hospitals, Graduate School of Medicine, University of Pennsylvania. Illustrated with Sixty-four Halftones and Line Engravings, some in Colors. Second Revised and Enlarged Edition. Philadelphia: F. A. Davis Co., 1925.

The appearance of a second edition of Dutton's fine work in a comparatively short time, and with many additions, revisions, and new illustrations, is striking evidence, both of the excellence of this presentation and, if any were needed, of the general interest in this most important branch of therapeutics. Intravenous therapy, as the author points out, includes not only the administration, by hypodermic injection into the venous channels, of the active principles of drugs, or of solutions, physiological or other, but the transfusion of whole or modified blood, as well. The chapters on this topic, to anticipate somewhat, are unusually complete, authoritative, and instructive. Not only are the various transfusion methods detailed clearly and graphically, but the rather involved, but vitally important, matter of the choice of a donor according to groups and blood types is presented in a thoroughly scientific yet practical manner.

The illustrations, particularly those of apparatus and appliances, add materially to the instructiveness of Dutton's volume. It may be mentioned, in this place, that much of the first edition was appropriated without credit by certain commercial firms and unethical physicians. While we all know that imitation is the sincerest form of flattery, the bold and bald "lifting" of an author's "stuff" is calculated to produce emotions far less pleasurable.

CLINICAL ORGANOTHERAPY

Opothérapie Clinique (Organothérapie)—Formulaire. Par Marcel Laemmer. Paris: Masson et Cie, 1925.

In this small volume the author has taken up the somewhat difficult task of classifying the best known and most used organotherapeutic products according to their clinical use and to give a precise manual of prescriptions for these products. He frankly admits in the introduction that this treatise is merely an essay based on the most recent laboratory findings on this subject and proved by extensive clinical use of the various substances.

These substances are divided into extracts as follows: First, endocrine glands, such as thyroid, parathyroid, thymus, pituitary, suprarenal and spleen; second, mixed glands, such as testicles and ovaries, kidneys, liver and pancreas; third, special glands with an external secretion, such as prostate, mammæ, stomach and small intestine, and fourth, tissues, such as brain, spinal cord, heart muscle, lung and lymphatic tissue, bone marrow and bone, muscle and finally placenta.

After discussing some general rules concerning the dose, prescription, and various methods of administration of these products, the author gives in the second part of his treatise the extensive formulary for their applications in various disorders. Most of the prescriptions are accompanied by references to recent literature, dealing with the organotherapy of the ailment under discussion.

The volume represents a most interesting attempt to develop a reliable manual of organotherapeutic prescriptions. Although it would not be possible after a prolonged use to decide the practical value of the work, it may be well recommended to anyone who is interested in this modern and certainly most promising branch of medical science.

NECROPSY FINDINGS

Postmortem Appearances. By Joan M. Ross, M.B., B.S. (Lond.), M.R.C.S., L.R.C.P., Assistant Pathologist to St. Mary's Hospital. With Preface by E. H. Kettle, M.D., Professor of Pathology and Bacteriology, Welsh National School of Medicine, Cardiff. Oxford Medical Publications. London: Humphrey Milford Oxford University Press, 1925. Pp. vii-216.

This is a practical little handbook on necropsy findings, giving in concise form, the chief anatomical changes found in the commoner diseases. It is recommended by the writer of the preface to the general practitioner who does an occasional necropsy, in which case it serves as a guide to what should be looked for. It is also recommended as a guide to the medical student in the necropsy room.

The introductory chapter deals with the subject of death in general and emphasizes the findings that one would expect to encounter under different circumstances, such as asphyxia, syncope, and coma; the signs of death; necropsy technic. The different causes of death are grouped according to other causes than disease (physical and chemical), general metabolic diseases, general infections, and diseases of the various organic systems. A general plan, consisting of the external appearances and the internal appearances (arranged according to the organic systems), is followed throughout the book.

The appendix includes tables of anatomical normals, of the length and weight of the fetus, approximate weight or organs of the newborn, the dates of ossification of the principal bones, and the ages of the eruption of the teeth.

PAPERS BY MR. PAUL

Selected Papers. Surgical and Pathological. By F. T. Paul, D.Sc. Liverpool (Hon. Caus)., London: Baillière, Tindall and Cox, 1925.

This is a remarkable tribute from the Liverpool Medical Institute of Surgeons to Mr. F. T. Paul on his seventy-fifth birthday. It is a collection of papers written by Mr. Paul during his lifetime. Some of the papers were published as early as 1881. He is a man who evidently has been a great thinker and a keen observer. Many of these studies may be read now with profit. Mr. Paul is best known in this country for his treatment of intestinal obstruction with the use of the Paul's Tube. His article on intestinal obstruction is particularly worth reading.

Medicoliterary Notes.

Prof. Joseph Jastrow will deliver two lectures in the extension courses of the Columbia University Institute of Arts and Sciences, one on the Psychology of Superstition, and the other on Fanaticism.

* * *

The last issue of *Mental Hygiene,* the quarterly published by the National Committee for Mental Hygiene, contains a number of articles of unusual interest. Among them are: Individualism and the Organization of Neuropsychiatric Work in the Community, by Dr. Adolf Meyer; A Tentative Program of Cooperation between Psychiatrist and Lawyers, by Sheldon Glueck, Ph.D., LL.M.; Pleasure and Deterioration from Narcotic Addiction, by Dr. Lawrence Kolb; Personality Deviations and Their Relation to the Home, by Sybil Foster, chief social worker of the Habit Clinics of the Women's Municipal League of Boston; The Masculine Side of Occupational Therapy, by Louis J. Haas, director of men's therapeutic occupations at Bloomingdale Hospital: The Rôle of Conferences with Relatives in the Educational Program of a State Psychopathic Hospital, by Dr. Franklin G. Ebaugh, director of the Colorado Psychopathetic Hospital; Syphilis in the Etiology of Mental Deficiency, by Dr. Neil A. Dayton, assistant superintendent of the Wrentham State School; Résumé of Research Work at Letchworth Village, by Dr. Howard W. Potter, clinical director at Letchworth Village, and most of these may be obtained in reprint form. Outcome of Mental Diseases in the United States, by Horatio M. Pollock.

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The British press reports that Bond Street in London has recently opened a number of beauty parlors and rest rooms for pet dogs, where they may be bathed, curled and perfumed, while mistresses are shopping. Experts are provided to care for them properly and to feed them if they are left all day. Special diet kitchens have been added to prepare any sort of food specified by owners or favored by the petted darlings.

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The very full and detailed report of the Jamaica Hookworm Commission has just been received in this country. It is a rich source of information on the subject for all interested.

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Chewing gum is now exported from America to Europe, Asia, South America and Africa. American chewing gum is reported to be crowding out the ancient habit of betel nut chewing in the Near East. The industry of manufacturing gum is valued at more than Fifty Million Dollars, so that on the average of One million Dollars a week is spent for this strange luxury, and the makers are reporting their most prosperous year. Chewing gum originated in the course of experiments in 1860 to produce a substitute for rubber.—*N. Y. Times.*

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Announcement has been made of the provision by the Mayo Clinic of Rochester, Minn., through an agreement with the Metropolitan Life Insurance Company, for an endowment fund for one hundred and thirty of its staff who have reached, or when they will have reached, the age of sixty-five. Each member of the group will be assured a fund based on his yearly salary, but not to exceed $10,000. In addition life insurance on a group basis equal to the amount of the endowment is provided. This insurance is a gift from the Clinic to the staff.

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The *Manchester Guardian Weekly* for December 4, 1925, has an editorial under the caption "A Martyr to Healing Science" on the recent death of Reginald Blackall, one of the earliest experimenters with the curative possibilities of x rays. "His death was the end of a slow process which began when those rays had first been discovered more than twenty-five years ago, and when their effects on the handlers of them were hardly realized. One of Blackall's chief interests in recent years was to discover and perfect a method of complete protection for operators of x ray equipment.

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The Massachusetts Society for Mental Hygiene has recently published a leaflet called *Twenty Aids to Mental Health for Adults.* It was prepared by Dr. Henry B. Elkind, director of the society. Two other pamphlets on different aspects of the mental hygiene problem have recently been issued by the New York State Committee on Mental Hygiene of the State Charities Aid Association. They were prepared by Dr. Stanley P. Davies, executive secretary of the committee, and are entitled *The Institution in Relation to the School System,* and *Improvement of Facilities for Care of Mental Patients Pending Commitment in New York State.*

* * *

Literary investigators state that they have discovered documents in the city of El Toboso, Spain, that once belonged to Dona Ana Martinez Zarco with whom the author, Cervantes, is believed to have been in love, and so made her the heroine, Dulcinea del Toboso, of his romance, *Don Quixote.*

* * *

Berlin traffic policemen, according to press reports, have recently been suffering so severely from the carbon monoxide fumes of automobile exhausts, that gas masks have been suggested. A recent epidemic of illness among the traffic squads is believed to have been a form of poisoning from benzol fumes. It manifested itself by severe headaches, general lack of vitality, and in some cases a state resembling coma.

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The British press has been generous in its tributes to Dame Louisa Aldrich-Blake, dean of the London School of Medicine for Women, who died on December 28, 1925. She was considered one of the most able surgeons in England, and had done invaluable work during the war, and later as an administrator. A few months ago she was made a Dame of the Order of the British Empire by the King.

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A study of four hundred children discharged from the ungraded classes of New York city schools is reported in the November number of *Ungraded.* The author is Margaretta Taylor, a visiting teacher in the Department of Ungraded Classes.

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For *Harper's Magazine* for January the prolific Dr. Collins writes again, this time on Childish Americans. He analyzes the causes and evidences of our adult infantilism in his characterstic manner, and gives a list of symptoms for diagnosis.

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Recent publications of interest to the medical profession are *The Conquest of Disease,* by David Masters (Dodd, Mead); *The New Age of Faith,* by John Langdon-Davies (Viking Press); *Pygmalion, or the Doctor of the Future,* by R. M. Wilson, one of the *Today and Tomorrow Series* (Dutton); *The Young Delinquent,* by Cyril Burt (Appleton); *Comes the Blind Fury,* a novel by Raymond Eschollier, translated from the French, with the title there of *La Nuit;* it is a story based on hereditary influences in the life of a young girl (Dodd, Mead); *What Evolution Is,* by George Howard Parker (Harvard University Press); *Collected Papers,* by Sigmund Freud (Hogarth Press, London); *Light and Health,* by M. Lukiesh and A. J. Pacini (Williams & Wilkins); *State Laws Relating to Special Classes and Schools for Mentally Handicapped Children in the Public Schools,* by Dr. Thomas H. Haines, reprinted from *Mental Hygiene;* and *Everychild: How He Keeps His Mental Health,* by Dr. Frankwood E. Williams, reprinted from *Annals of the American Academy of Political and Social Science.*

* * *

Some interesting facts are brought to light in a report recently made public by Dr. Arthur W. Gilbert, Massachusetts Commissioner of Agriculture, who has been making a study of the extent of damage to crops from thunderstorms. One of these facts is that fear of lightning is far out of proportion to the grounds for it. The chance of death from this cause is only one in more than a million. In a five year period nineteen persons were killed by lightning in Massachusetts, an average of 3.8 persons per year. The survey indicates that the farmer is ten and a half times as likely to be struck by lightning as the city man, because of the lack in rural communities of steelframed buildings, trolley wires, and other conductors that tend to relieve electrical tension before and during storms. On the other hand, the farmer is twenty thousand times safer from harm on his country roads than the city man dodging motor traffic in large cities!

Abstracts from Current Literature

RESPIRATORY DISORDERS

Tonsils.—Edmund Nobel and Adolf F. Hecht (*Klinische Wochenschrift,* May 28, 1925) state that the results from operations on the tonsils can be properly judged only by simultaneous careful consideration of the pathological physiology of the tonsils. Hypertrophy of the tonsils shows a maximum occurrence in the fourth and tenth years of life. Spontaneous retrogression of the tonsils may be expected with great likelihood after puberty. There certainly does often exist a relationship between diseases of the tonsils and other diseases, such as rheumatism, endocarditis, nephritis, etc., but can be definitely established or made probable only by observation of the clinical course. Tonsillectomy, done after the fifth year of life, undoubtedly reduces the tendency to anginas in ninety per cent. of the cases. Poor results were observed by the author in only seven cases among sixty-eight operations. Before the fifth year of life, however, a good result was found only in sixty-one per cent. of the cases (thirteen poor results among thirty-three cases).

Lobar Pneumonia: Deviations from the Typical Types with Particular Reference to the Temperature Curve.—I. H. Goldberger (*Archives of Pediatrics,* June, 1925) finds that uncomplicated primary lobar pneumonia in infants and children may be accompanied by a decidedly atypical temperature curve. There is a seasonal incidence in pneumonia, the predominance being in the spring. Infants under one year, and children over three years of age in the author's institution, were relatively immune to primary lobar pneumonia. Children in poor physical condition, although less susceptible to primary lobar pneumonia than those in good physical condition, predominated in the author's group of cases (fifty-nine per cent. characterized as poor compared to twenty-seven per cent. considered in good physical condition). Ninety-five per cent. of the twenty-two cases showed the characteristic triangular consolidation röntgenographically, of which seventy-three per cent showed the site of consolidation equally divided in the right upper and right lower lobes. Practically all lobar pneumonias begin at the periphery of the lung. This observation contradicts the term "central pneumonia" as it is commonly used. Lobar pneumonia may run its course in forty-eight hours, but the average is nine days. Temperature oscillations averaging six degrees may occur daily in lobar pneumonia (forty-six per cent of this series) and in some cases the intermissions may be as much as ten degrees. The roentgenogram is a positive means of distinguishing between bronchopneumonia and lobar pneumonia, whereas clinically, the differential diagnosis is often difficult and uncertain.

Massive Pulmonary Collapse.—A. Bertram Soltau (*British Medical Journal,* March 21, 1925) states that massive pulmonary collapse is a definite clinical condition which occurs far more frequently than is supposed. It is caused by inhibition of the diaphragmatic action, whether from reflex or inflammatory causes. Its onset is favored by the supine position. It follows direct trauma of the chest wall or lung, and surgical operations on the abdomen, even remote from the diaphragm.

It gives definite physical signs, which may simulate pneumonia or plural effusion. At first breath sounds are practically absent, or only the faintest respiratory "whisper" will be heard in the typical case. There is an associated absence of vocal resonance. The lung appears "dead" with no bronchial air passing through it. The sign-complex is therefore a retracted immobile chest with raised diaphragm, dull on percussion, and exhibiting neither breath sounds nor vocal resonance, and with the heart displaced toward the dullness. In the second stage there is a dramatic alteration. The percussion note is still dull, but the breath sounds are tubular or amphoric, and vocal resonance is greatly increased. Ventilation is commencing and the bronchial respiration becomes audible. In the final stage dullness becomes less pronounced, the tubular breath sounds are less definite, and frequently moist adventitious sounds are heard. With the expansion of the lung the heart returns gradually to its normal position. Pyrexia is not uncommon, but does not reach a high degree. The differential diagnosis depends on determining the position of the apex beat and the diaphragm. In cases of injury, the lung on the side remote from the trauma may be affected.

Very little can be done in the way of active treatment. Oxygen is essential for severe dyspnea, and should be given practically continuously. The semiupright position should be assumed by the patient.

Is Our Knowledge of Pneumonia Sufficient to Explain Its Endemicity and Occasional Epidemicity? A. C. Abbott (*American Journal of the Medical Sciences,* June, 1925) maintains that the evidence does not justify the belief that the endemicity and occasional epidemicity of the disease pneumonia are due to the simple transference of one or another of the types of pneumococcus from the sick to the well. The fact that recovery from pneumonia confers no appreciable immunity from subsequent invasions by the homologous type of pneumococcus (or by other types) justifies a question as to the etiological relationship of that organism to the disease pneumonia.

The occurrence of pneumonia as a result of the activities of diverse organisms suggests the possibility that the lesions of the lungs are but secondary to an antecedent general or local condition brought about by some other as yet unidentified organism. If the pulmonary lesions may be regarded as secondary developments, may not the spread of the disease be explained by the existence of some, as yet unknown, predisposing agent; and may not invasion and transmission occur before the disease is recognizable as pneumonia? This would explain the persistent, ubiquitous, high rate of morbidity as well as the occasional epidemic explosions.

Significance of Anaphylaxis in Pneumococcus Immunity.—George M. Mackenzie (*Journal of Experimental Medicine,* January, 1925) subjected guineapigs to immunizing injections of pneumococcus, titering the immunity at frequent intervals, and testing for the appearance and duration of allergy and anaphylaxis. Despite the presence of a high degree of active immunity and strong protective power in the serum, it was not possible at any time during the course of the experiments with immunized animals to demonstrate the presence in the serum of either precipitins or agglutinins. At no time was it possible to demonstrate any cutaneous allergy to protein extract, filtrates, or whole killed cultures. During the course of an artificially produced active immunity, anaphylaxis may at times be present and at times absent without any measurable effect upon the resistance of the animal to infection by intraperitoneal injection. In the particular instance studied, the experiments indicate that anaphylaxis to pneumococcus protein has no important effect upon the resistance of the animal to infection. It appears to be a concomitant without any significant rôle in the immunity mechanism.

Causation of Postoperative Pneumonia.—H. Featherstone (*British Journal of Surgery,* January, 1925) finds that in postoperative pneumonia the anesthetic agent and the method of administration, save in special cases, seldom are decisive factors; general health and local disease of the lungs on the other hand may play a considerable part. He describes the process of collapse as follows:

Owing to the pain at the point of incision (usually abdominal) the patient does not breathe fully and the lower lobes of the lungs do not freely expand and contract, so that congestion of blood with edema sets in. The bronchioles of the disordered region are more or less choked by this swelling of their walls, which has, perhaps, been increased from irritation by the anesthetic agent. Into this motionless and wellnourished region, germs and particles of débris arrive. The mode of access may be by the air or by the blood or by the lymph. In these circumstances the patient cannot cough owing to pain, and the exudate and the débris, which should have been expectorated or evacuated by the ciliated epithelium, lie undisturbed in the lower lobes. Closure of the bronchioles in this nearly motionless area, and absorption of air from the alveoli, now ensue. The result of the process is massive collapse of the lung or, according to Whipple, pneumonitis.

When the infection is particularly virulent, if the patient's resistance is low, and if the diaphragmatic paralysis persists, we shall not be surprised to find true bronchopneu-

monia as the sequel, and it will be of coalescing lobular distribution, chiefly in the lower lobes, affecting those lobules whose obstruction determined the collapse of that portion of the lung. At operation, every care should be taken to prevent loss of heat, of fluid, and of blood, and especially exhaustion from trauma to nerve tissue, and to highly vascular parts. Infection of the lung is often by means of aspiration in the presence of certain other factors. Severe sepsis in other regions affects the lung via the bloodstream. There is evidence that lymphatic infection through the right half of the diaphragm leads first to pleurisy and then to pneumonia. In the absence of severe sepsis, operations on the abdomen, and especially the upper abdomen, provide the start of the chain of events which leads to pneumonia. Pain in the abdomen from operative trauma, or from inflammation, gives rise to rigidity of the anterior abdominal wall and to reflex inhibition of the diaphragm, together with some spasm of the lower intercostal muscles.

Experimental Pneumonia in Mice Following the Inhalation of Streptococcus Hemolyticus and of Friedländer's Bacillus.—Ernest G. Stillman and Arnold Branch (*Journal of Experimental Medicine*, May, 1925) found that the persistence of streptococcus hemolyticus in the lungs of mice following inhalation was irregular. The organism may be recovered as late as the seventeenth day after exposure. Tests for contact infection showed that this played no part in the mortality from streptococcus septicemia. Normal mice sprayed with Friedländer's bacillus also showed the organisms in the lungs and heart's blood a number of days after exposure. A large number of these animals die of a septicemia during the thirty days following spraying. In normal mice exposed to pneumococci, the organisms rapidly disappear from the lungs, and only an occasional animal develops pneumococcus septicemia. However, if the mice are first alcoholized, the pneumococci persist for a longer time in their lungs, and a number will die of septicemia.

Massive Collapse of the Lungs.—C. Jackson and W. E. Lee (*Annals of Surgery*, September, 1925) discuss the mechanism of this disease and its relation to foreign bodies in the bronchi and to postoperative complications, concluding that acute massive collapse or massive atelectasis is a phenomenon which has been recognized in association with varied conditions. Although diverse they have two factors in common which we believe have some bearing upon the etiology of pulmonary collapse, namely, embarrassment or paralysis of the respiratory movement and obstruction of the bronchial tubes. The interference with the respiratory movements may be as slight as that resulting from posture and may increase to that of the voluntary or reflex inhibition from postoperative pain of abdominal operations, or even reach the complete paralysis which occurs in diphtheria. Obstruction has been found to be caused by foreign bodies, bronchial secretion or extrabronchial pressure as is produced by tumors.

Massive collapse of the lungs is a comparatively rare condition and its incidence postoperatively is approximately greater than eight per cent. However, it has a definite surgical significance which should not be overlooked. The most characteristic sign is displacement of the heart towards the collapsed lung. Partial collapse of the lung is probably a frequent complication following abdominal and particularly upper abdominal, operative procedures. The arrest, in these areas of partial collapse, of multiple emboli coming from the operative field is probably the mechanism and the lesion which so frequently occurs after operative procedures, and which is commonly called postoperative or postanesthetic pneumonia.

When infection is added to these minute multiple infarctions in the collapsed areas a true bronchial pneumonia is established. This we believe is rare compared to the frequency of partial collapse combined with minute pulmonary emboli and infarction.

If two of the factors underlying pulmonary collapse, either massive or partial, are 1, inhibition or arrest of respiratory movements and 2, subsequent obstruction of the bronchi with accumulated bronchial secretion, there are definite indications for prophylaxis and treatment of this condition. The minimizing of the trauma of all operative procedures, the conservative use of morphia and other inhibitors of the normal bechic or cough reflex; and the avoidance of fixed or unnatural positions postoperatively would seem rational procedures. The choice of such anesthetic agents as have the least irritating effect upon the bronchi and result in the minimum bronchial secretions, as local anesthesia, gas oxygen anesthesia and ethylene, are mandatory. All these measures are prophylactic. After the condition of massive collapse is established the dangers are not in the lesion itself, unless it be bilateral, but in the complications which are apt to ensue, as pneumonia in one of our cases, empyema and lung abscess. The fact that of the recorded cases that have recovered spontaneously the average duration of the recovery has been about twenty-one days and that in the case here reported seventy-two hours after removal of the obstructing bronchial secretion the lung had been restored to its normal condition, is at least suggestive.

Cytology of the Sputum.—Emanuel Propper (*Schweizerische medizinische Wochenschrift*, July 9, 1925) finds that for a thorough study of the cells in the sputum the moist fixation of Liebmann and the staining with hemalum-eosin are the most useful. The Pappenheim staining method is the best for the granules. The moist fixation method is also suitable for a study of phagocytosis.

In order to know in what part of the respiratory tract a sputus originates, we must stick to the principle of the characteristic epithelium of the various portions of the tract. Every pulmonary sputum contains alveolar epithelium. It does not play the important part in the socalled desquamative pneumonia heretofore believed; they also occur as cardiac decompensation cells and as macrophages of coal pigment.

The sputum content of polynuclear cells and neutrophiles is considerable and aside from their part in immunity, their main work lies in the phagocytosis of bacteria, especially tubercle bacilli. This phagocytosis of tubercle bacilli in the sputum is almost universal. There appears to be a diminution or even disappearance of the granules in pulmonary tuberculosis.

Eosinophiles are frequently found in the sputum, and they are markedly increased after injections of tuberculins. This may be used as a favorable prognostic sign. A precritical sputum eosinophilia is an equally favorable prognostic sign in croupous pneumonia. Here the eosinophiles usually have two nuclei and originate in the blood. Lymphocytes are found in only a small number in the sputum. The monocytes in the sputum are probably of reticuloendothelial origin. Their frequent occurrence is observed in caseous pneumonia and in chronic pulmonary tuberculosis with an unfavorable prognosis, where they are to be considered as a specific tissue reaction.

Pfeiffer's Influenza Bacillus Meningitis.—Walter Schnyder and Eugen Urech (*Schweizerische medizinische Wochenschrift*, June 11, 1925) draw the following conclusions from the clinical course and their bacteriological and pathologicoanatomical findings in seven cases described and fifty-six other cases collected from the literature:

1. The Pfeiffer bacillus is not a rare excitant of acute meningitides.
2. The age of early childhood (up to three years) is affected most frequently.
3. The nasopharyngeal space, the air passages, and the auditory apparatus serve as the chief portals of entry.
4. The diagnosis can be established definitely only by bacteriological examination.
5. The prognosis is unfavorable. In the sixty-one cases only six patients lived. The cure is followed by serious sequelæ, such as deafness, and in one case blindness was observed.
6. The duration of the disease is short and rarely is more than one to fifteen days.
7. Pathologic anatomically there is an acute suppurative leptomeningitis affecting chiefly the base and frontal portion of the brain, and less often the convexity.
8. Epidemiologically, the meningitis produced by the Pfeiffer baccillus resembles the meningococcus meningitis most closely. It usually appears sporadically.

The authors' cases and those selected from the literature did not occur during the prevalence of a wide grippe epidemic. The authors believe that the Pfeiffer bacillus may be considered as a definite excitant of acute meningitis. Like the meningococcus, it is a pus inciter and occasionally may even produce a septicemia. The authors' observations are not sufficient to enable them to give the Pfeiffer bacillus an etiological significance in pandemic grippe.

Extrapleural Thoracoplasty.—H. M. Davies (*British Journal of Surgery*, July, 1925) records his technic, a modification of the Wilms type of operation, in detail. His attitude in a few of the controversial points associated with this procedure are as follows:

Chloroform for the very light anesthesia required, supplemental to the local, in order to keep the patient asleep during the operation, is the anesthesia of choice. The question of postoperative pain is of great importance, as on the absence of this depends so much the ability and the willingness of the patient to cough and to bring up the accumulated expectoration. It is for this reason that the author injects into the neighborhood of each nerve five mm. of absolute alcohol, so as to obtain an anesthesia which will continue until the healing processes—including the rounding off of the cut ends of the ribs—have become complete. The operation should be done in one stage if possible, but always having the greatest regard to the safety of the patient. If the patient's general condition is good, if there is no difficulty in respiration when on the table, and the color is satisfactory, if the sputum is not excessive and likely to flood the bronchial tubes when the lung collapses, and the disease is not acutely active with considerable complicating secondary infection, then the operation is started off with the complete incision as for a one stage operation. If there is any doubt, however, as to the patient's ability to tolerate the complete rib resection, the operation is begun as though for a two stage undertaking. When this first part is completed up to and including the rib excision, the condition of the patient is considered, and if this appears to justify it, the second stage is carried out. It is most important for efficient collapse that, after the operation, the scapula should sink right in so that it lies at a deeper level (i.e., more anterior) than the posterior surface of the transverse processes. Owing to the changes in position of the freed end of the ribs, already mentioned, this falling in will take place even if the whole of the ribs underlying the scapula are not excised.

Nasal Disease.—M. J. Gottlieb (*American Journal of Surgery*, July 1925) states that retrobulbar optic neuritis is caused in the great majority of cases by disease of postethmoidal and sphenoidal sinus. If time permits all other causes should be excluded before operating. If time is precious one is justified in opening up the sinuses without further investigation. The element of haste is so important that it cannot be overemphasized. The middle turbinates should not be spared in any instance.

Production of Immunity with a Soluble Antigen of the Pneumococcus.—N. S. Ferry and L. W. Fisher (*Journal of Laboratory and Clinical Medicine*, July, 1925) obtained an aqueous extract of Type I pneumococcus from the washings of this organism which was fairly stable at a temperature of 60° C. for one hour with antigenic properties extremely high, without resorting to chemical extraction, and suggests the possibility of the use of such an extract for prophylactic purposes against pneumonia in the human.

TUBERCULOSIS

Tuberculosis of the Tongue.—J. M. T. Finney and J. M. T. Finney, Jr. (*Surgery, Gynecology and Obstetrics*, June, 1925) state that direct trauma seems to be the only important causative factor. In no case was the trauma to be charged to that popular bugbear, the pipestem. The majority of the patients were in the forties; it might, therefore, be classed as another of the "afflictions of middle life." There is no site of predilection for the development of lesion; any portion of the tongue may be attacked, with most of the lesions occurring anterior to the circumvallate papillæ, and about equally divided between tip, margins and dorsum. The tongue lesions may be single or multiple. There may or may not be any regional adenopathy; in none of these cases was glandular enlargement very marked, and in several it was entirely absent. It would seem wise, in a case which seems to be primary, to treat it by wide excision, much as if it were carcinoma.

Tuberculoma of the Cecum.—F. C. Herrick (*Annals of Surgery*, April, 1925) finds that there occasionally occurs in tuberculous patients a tuberculous process localized chiefly in the cecum or colon and characterized by a predominance of scar tissue and roundcell infiltration to a degree closely simulating new growth. This process has been called hyperplastic tuberculosis, but recently authors agree on the term of tuberculoma as more descriptive. It is apparently noted more commonly in the pathological than the surgical departments. By causing chronic incomplete ileus this condition may produce a major handicap in the recovery from pulmonary tuberculosis. The chief errors, both in preoperative and operative diagnosis are, calling it appendicitis in young adults or cancer in middle or later life. Incomplete or complete ileus may furnish the first definite symptoms. In several classical cases and some reported more recently, histological differentiation was difficult or impossible. Treatment in young adults consisting of a simple exploratory operation or an exclusion anastomosis has been followed by excellent results. Resection is preferable in good surgical risks. In an old patient where differentiation from cancer can be made an exclusion anastomosis is preferable.

Thoracoplasty for Pulmonary Tuberculosis.—J. Alexander (*Annals of Surgery*, April, 1925) asserts that the high incidence of tuberculous pneumonia following resection of the lower ribs is due principally to impairment of the function of expectoration. Substitution of radical phrenicotomy for resection of the lower ribs, as the first operation to be performed, will probably lessen the danger of postoperative pneumonia as well as reduce the frequency with which fresh small tuberculous lesions develop in the unoperated lung. In cases in which there is little or no clinical tuberculosis in the lower lung and in which the diaphragm rises well into the chest after phrenicotomy, resection of only the upper seven ribs has, in the author's opinion, important advantages over the one stage or two stage thoracoplasty of ribs XI to I, which is now in general use. The combination of primary radical phrenicotomy and secondary resection of the upper seven ribs is worthy of extensive trial in such cases. When the lower lung contains more than a few tuberculous lesions, or when the diaphragm rises only a little into the chest after phrenicotomy, the lower ribs should be resected as the third stage of the operation.

Rôle of Monocyte in Tuberculosis.—R. S. Cunningham, F. R. Sabin, S. Sugiyama, and J. A. Kindwall (*Bulletin of the Johns Hopkins Hospital*, October, 1925) present as a new factor in the study of tuberculosis the concept that it is a disease which affects primarily a single strain of cells, namely, the monocytes. Evidence is presented to show that the infection of tuberculosis causes an overproduction of the monocyte, including all of its stages, namely the reticular cells, the typical monocyte and its two derivatives, the epithelioid cell and the giant cell; that the tubercle bacillus so alters the cytoplasmic activity of the monocyte that the cell becomes a suitable medium in which the bacillus can live and multiply, or in other words, that the organism of tuberculosis becomes a parasite within the cell; and that the marked overproduction of monocytes in the connective tissues is correlated, in the acute phase of the disease, with an increase in monocytes in the circulating blood. This new concept of the essential nature of the disease and the observation that it is possible to correlate the progress of the disease with changes in the circulating blood opens up a new experimental attack on tuberculosis, and the authors think it probable that the fact that the organism of tuberculosis can live as a parasite within the monocyte may mean that the bacillus is thereby protected to some degree from the usual reactions of the body against it.

Complement Fixation in Tuberculosis with Particular Reference to a Group of 102 Positive Reactions.—Lloyd R. Jones (*Journal of Laboratory and Clinical Medicine*, July, 1925) did a tuberculosis complement fixation test on 617 patients with one particular lot of antigen. There were positive results in 102 of the remaining 400 giving a negative test, it was recognized that many were tuberculous, but the purpose of the work was merely to determine the presence of tuberculosis among those giving a positive reaction. Of the 102 positive cases, fifty-five were active cases of pulmonary tuberculosis, with tubercule bacilli in the sputum; twenty-two were active clinically, but with negative sputum; twenty-one were pulmonary tuberculosis quiescent clinically, but with well defined evidence of former tuberculous process; one case was negative clinically, but was a case of syphilis with a positive Wassermann, and three other cases were also negative clinically, but respectively had laryngitis, asthma, and in the third instance, no positive clinical condition. Concerning the socalled cross

fixation or nonspecific fixation with leutic sera, ten cases gave a positive Wassermann and a positive tuberculous complement fixation test concomitantly, but in all but one the diagnoses of syphilis and tuberculosis were made, the one exception being considered clinically tuberculosis free. In employing this test an antigen preparation should be accepted only after thorough preliminary trial, showing satisfactory antigenic qualities. The amount to be used in the test can be determined only after careful experimentation, and must be such as permits a very fine quantitative adjustment between complement, antigen, and patient's serum. Several control sera should be regularly employed to detect evidence of false fixation, antigen deterioration, etc. The limited observations reported tend to suggest that positive reactions as obtained with the test when correctly performed, indicate with a high degree of accuracy the presence of tuberculosis "reaction bodies" irrespective of whether the disease is then clinically active or quiescent.

Early Diagnosis of Pulmonary Tuberculosis.—Ian Struthers Stewart (*Glasgow Medical Journal,* September, 1925) says that a typical early case would present the following symptoms and physical signs: There would be present cough, lassitude, and pyrexia, and, on examination, deficient expansion, faint or harsh inspiration, with possibly, after coughing, a few fine crepitations in the axilla, round the nipple, or under the clavicle. Radioscopic examination would show deficient movement of the diaphragm on one side with a shadow or shadows extending into the lung substance. Evidence of dense consolidation would be obtainable neither by clinical nor by radioscopic examination.

Tuberculous Disease of Joints.—C. H. Fagge (*Clinical Journal,* August 19, 1925) says that much can be done for hip disease if it is seen in the first stage. If not seen until there is adduction and shortening, possibly in the presence of an abscess, obviously the results will not be as good as if the child had been seen when it began to limp. The second factor is the social class of the patient. The poor child will not be seen at as early a stage as the child with a more careful mother. As in many diseases in children, the prognosis is exactly proportionate to the social class affected. In the early stage of tuberculous disease the formation of an acute abscess, often with the presence in the pus of staphylococci, or even streptococci, shows that destruction is great and the resistance small. In the later stages the formation of a cold abscess does not seem to be of so bad a prognostic significance. In fact, the author believes that the formation of a cold abscess is the last struggle of the tubercle bacilli, and when this abscess has been aspirated the disease subsides and the joint consolidates.

Before aspirating such abscesses there should be definite indications, such as the swelling getting larger, or tending to point. The mere presence of pus in relation to a joint in the form of a cold abscess is not, by itself, a positive indication to evacuate it, because this cannot be done without risks. Small collections of pus arising from tuberculous joints often disappear under continued rest. The author has not found that the injection of these abscesses with any material such as camphor, thymol and sulphuric ether, i. e., two parts camphor, two parts thymol and one part sulphuric ether, was of any value, nor the injection of iodoform. The great thing about evacuation of these abscesses is to introduce a fairly large needle some distance from the surface of the abscess, so as to go through healthy tissue before entering the abcess, and then to do all you can to prevent subsequent staphylococcic invasion. Unfortunately, careful as you are, staphylococcic infection will occasionally occur. In my experience, staphylococcic infection of a tuberculous joint is generally the most potent factor in inducing a fatal ending.

Spleen Extract in Tuberculosis.—Bayle (*Presse médicale,* September 23, 1925) maintains, after twenty-two years' experience, that spleen extract, given hypodermically or by mouth, is of pronounced value in tuberculosis, whether of the lungs, bones or joints. Splenic opotherapy has been shown to increase the number of red and white cells and the hemoglobin percentage, to increase the ratio of lymphocytes and cause eosinophiles to appear, to reduce the elimination of phosphates and increase the blood calcium, to enhance connective tissue deposition about tuberculous foci and promote healing, and to cause reduction of the number of tubercle bacilli, granular changes in these organisms, and finally their disappearance. Several experimenters, including the author, have found spleen injections strikingly effective in the prevention and treatment of tuberculosis in guineapigs and rabbits. In man, there is prompt and lasting improvement in the general condition, weight, cough and dyspnea, blood, tuberculous lesions, phosphaturia, and tubercle bacilli. For oral use, the hog spleen is put up in a syrup, each tablespoonful of which represents twenty-five grams of the organ. This mode of administration is employed in patients having merely anemia or slight glandular swellings; prophylactically in the associates of consumptives or in convalescence from severe illnesses, and in general, as an auxiliary to the hypodermic treatment when the condition of the stomach permits. The dose in adults is four tablespoonfuls daily with the meals; in children below three years, one teaspoonful daily for four days a week, and at the intervening ages, proportionate amounts. In adults and children above ten years, the syrup is given in courses of twenty-one consecutive days, with intervening periods of one to two weeks. Whenever there are definite tuberculous lesions, hypodermic spleen medication is indicated. An extract of hog spleen in five mill ampoules is used. In adults the single dose is one to two ampoules. One entire ampoule is used even in children of four years. The injections may be either subcutaneous or intramuscular, preferably in the abdominal cellular tissue or the buttocks. The injections may be regarded as painless, and never induce fever or anaphylactic phenomena. Twelve injections are given in pairs on successive days, with intervals likewise of two days, the entire course of twelve injections thus occupying twenty-two days. The treatment should be continued for a few months after cecovery. At the same time the usual treatment by diet, fresh air and rest is applied in pulmonary cases, with ovarian, thyroid, parathyroid or adrenal gland when indicated. In osteoarticular forms, immobilization in plaster or silicate apparatus is needed only for a relatively short time, on account of the treatment by spleen extract.

Pneumoperitoneum in the Treatment of Tuberculous Peritonitis.—W. Nelson Mercer (*Virginia Medical Monthly,* June, 1925) asserts that the simplest, safest and most logical method of treating tuberculous peritonitis with ascites is to remove the fluid with a cannula and to follow this by an injection of filtered air into the peritoneal cavity by means of a pneumothorax apparatus. This may be repeated as often as necessary until all fluid has disappeared without producing any harmful effects upon the patient.

Bronchial Gland Tuberculosis.—John B. Hawes, 2d, and Eli Friedman (*Boston Medical and Surgical Journal,* May 14, 1925) state that at the present time there is an amazing difference of opinion among x ray men and between röntgenologists and clinicians as to the interpretation of x ray shadows of the hilus region in children. There is no apparent unaminity of opinion as to what constitutes normal or abnormal, tuberculous or nontuberculous, active or inactive, old or recent. The whole subject of the diagnosis of bronchial gland or hilus tuberculosis is still in a stage of doubt and uncertainty. "Signs" at the best are unreliable and x ray evidence at present of little value. Diagnosis should be based on history, exposure, positive von Pirquet, and constitutional signs and symptoms.

FRACTURES AND DISLOCATIONS

Open Reduction of Fractures.—A. L. Soresi (*Journal of Bone and Joint Surgery,* April, 1925) declares that open reduction of fractures by the no foreign bodies and tight fitting window cast technic, represents an advanced step in the treatment of fractures. In the cases in which the method was applied by the author results have been most satisfactory, none of the complications common to the other methods of open reduction, such as infection, osteomyelitis, necessity of removing the foreign bodies used for osteosyntheses, delayed union, painful limbs, or deaths, were observed. In cases where infection was present no unpleasant complication was noted; the results were as satisfactory as in the clean cases. This fact demonstrates that complications noted when other methods are followed are due to the presence of the foreign bodies used in the process of osteosyntheses. It follows that foreign bodies prevent the proper formation of callus and favor infection, while direct good coaptation of the fractured ends of the bone, presence of blood, complete absence of foreign bodies in the wound, mean better union, because callus formation is not hindered; better function, by preventing infection, damage to nerves,

blood vessels, muscles and tendons. Contrary to the generally accepted opinion, bones can stand a great deal of trauma and infection, the ordinary usual complications following trauma and infection being due to the presence of foreign bodies, which are injurious to the process of bone repair.

Fractured bone should be reduced and maintained in proper position without leaving any foreign body in the wound. A cast that is applied without padding the limb is indispensable to maintain the proper coaptation of the fractured bones. The elimination of foreign bodies and the application of the tight fitting cast allow the greatest comfort to the patient.

Fractures of Carpal Navicular Bone.—K. Speed (*Journal of Bone and Joint Surgery*, July, 1925) advises that the treatment of recent navicular fracture—that is, a day or so old—is immediate immobilization of the hand, thumb, and wrist in a position of slight radial and volar flexion. This immobilization should last seven or eight weeks and should be followed by graduated active use, with daily baking by dry heat. If a happy outcome is desired, no pain should ever be set up by overuse or early hyperrange of motion of the wrist.

For old fractures—and we call them old if they have gone undiagnosed seven days or longer—the best and most satisfactory treatment is carpalectomy of the navicular. No matter how many fragments are present, all the bone is removed. I find no reason for leaving the distal fragment: it always sets up irritation and eventually causes symptoms equal to old fracture. Two patients have come to me from whom the proximal portion of the fractured navicular was removed. After several years subsequent falls caused a volar dislocation of the lunate—perilunar transnavicular dorsal dislocation of the wrist.

The earlier the bone is removed, the better the result. In cases of no greater duration than six months the prognosis is very good. If the fracture has existed five to ten years, the prognosis is not so good, but by taking out the entire bone pain can be completely, and stiffness partly, removed. If the carpus is truly in a condition of bony ankylosis, a wrenching of the hand into a cock-up position may improve the function, but a carpalectomy of the whole proximal row leads to better results. For these long standing fractures with bony ankylosis after carpalectomy of the proximal row, a fascial transplant is inserted in the radiocarpal joint as in arthroplasty. Active and passive use are started as soon as the operative wound has healed.

Fractures of the Lower End of the Radius.—R. M. Carter (*Surgery, Gynecology and Obstetrics*, September, 1925) states that a thorough knowledge of the anatomy of the parts and the mechanism of the usual fracture is essential to proper treatment. It is probable that no one mechanism will satisfactorily account for all cases. The mechanisms fall into three general classes, depending upon direction and mode of transmission of the active forces, as follows:

The force is transmitted by means of bony segments exclusively, no ligaments being involved. To this class belong the theories of Dupuytren, Nélaton, and Malgaigne.

The force is concentrated upon the anterior radiocarpal ligament, which tears off a fragment. Here belong the theories of Le Comte, Tillaux, Delbet, Contremoulin, and Pilcher.

The force follows a complex course from humerus to ulna, and from ulna to radius, by way of the interosseous membrane. This view is defended by Lopes and Hennequin.

Any of these, or combinations of them, may be active in any given case. Successful treatment of these fractures consists in immediate, complete reduction, preferably under an anesthetic, and early passive motion and massage. Operative treatment, as a rule, is indicated only in old, badly treated or undertreated cases.

Fracture Calamities and Their Management.—J. O'Conor (*Annals of Surgery*, January, 1925) finds the following method of procedure rapid and effective in cutting bone grafts.

When the site for the graft has been prepared, take the dimensions of the graft required by cutting a piece of thin lead foil to its exact size and shape. Then expose the periosteum through a corresponding area over, e.g., the anterior surface of a tibia. Guided by the application of the mould to the part, with scalpel, make two transverse incisions through the periosteum, one at the upper and the other at the lower border of the mould, sufficient for the application of an osteotome whose width at least should be double that of the graft required. The bone is then divided above and below transversely into the medullary canal.

The mould still retained its position, i.e., over the bone central between the limits of the two transverse osteal sections, the periosteum is then incised along the lateral margins of the mould joining the transverse lines. Commencing at one end of a longitudinal line with osteotome the bone is lightly grooved, in due osteal grain, from one transverse section to the other by gentle taps with a hammer. A narrow furrow is next similarly outlined on the other side.

The reason for employing an osteotome much broader than the graft required will now be obvious in that the two longitudinal grooves begin and end distinctly within the compass of the transverse sections. Attention to this detail insures a direct line in proper plane and excludes any possibility of splitting the bone above or below the limits defined for removal of graft when the osteotome is made to complete the bilateral osteal division into the medulla. The graft, with its periosteum intact, is then levered out and directly applied where required. This wound is at once closed by through and through silkworm gut sutures, each of which is made in transit to embrace any periosteum available. The tibial wound is then sutured.

Dislocation of Shoulder.—W. W. Plummer and F. N. Potts (*Journal of Bone and Joint Surgery*, January, 1925) suggests a technic, applicable to recurrent anterior shoulder dislocation, for the purpose of applying a check to the anterointernal slipping of the head.

With the patient on his back, and the arm at the side in a position equivalent to the middle of the arc of rotation of the humerus, an incision is made just external to the greater tuberosity and in the long axis of the arm. The incision should extend well up on top of the acromion and below the surgical neck of the humerus. The fibres of the deltoid are separated, and the underlying capsule (or better, connective tissue investiture of the joint) bared and cleared to expose the anterior and external edge of the acromion. From the thigh a strip of fascia lata five or six inches long by one inch wide is dissected, divided into two narrow strips to be used for the transplants. A coarse, full curved needle is threaded to each end of each strip. The needle on one end of the first strip of fascia is carried through all of the layers down to bone at the base of the greater tuberosity, avoiding the biceps tendon, and in a direction upwards toward the anterior tip of the acromion. The needle point emerges here and is passed through a small drill hole in the edge of the acromion to bring the end of the fascial strip upon the upper surface. This has taken half of the first strip. The needle on the other end of the same strip is now inserted at the base of the greater trochanter a little external to the first suture and brought up through the acromion as before. The two ends of the fascial strip are drawn tight and sewn together and to the top of the acromion with No. 1 chromic gut. The second fascial strip is implanted in a similar manner external to the first. The wound is closed in the usual way and the arm dressed at the side in sling and thoracic binder. We have in effect now two fascial transplants to the shoulder capsule in the form of two double mattress sutures. These sutures, being short and placed as they are, tend to limit movements of the head; first, away from the acromion by their tension; second, rotation in both directions, for the same reason. It was assumed that abduction would also be limited due to traumatising of the subdeltoid bursa and thickening about the greater tuberosity. This limited abduction has followed in both the cases operated, but has not persisted in the degree of limitation that might have been expected.

Preserving and Restoring Function in Fractures.—R. T. Tunstall (*American Journal of Surgery*, August, 1925) suggests a method of transplanting living periosteum, developing bone cells, and maintaining firm fixation without interfering with circulation, as follows:

"Some time ago I was led to the conclusion that some form of periosteal graft would be the most useful and give little disturbance of the circulation, and that, with it, the vascular buds from the host bone might readily find avenues for union and rapid reestablishment of circulation. Accordingly I have adopted the plan of removing only a

minute layer of cortical bone in order to preserve the penetrating branches from the periosteum. It can hardly be called an osteoperiosteal graft, but this very thin layer of cortex enables one to handle the periosteum more easily, imparting some stiffness to it as well as protecting the small vessels. This periosteum is applied around the bone defect as a sleeve, or bridges it, in strips, as boards across a gap; rolled up lengthwise, it may be interposed between fragment ends, where there is much loss of substance.

"When I determine the amount of periosteum needed, usually from the tibia, I mark out with a scalpel the area to be removed and with the fine Albee crosscut saw penetrate the cortex about a millimetre. With an osteotome this is removed with the periosteum. The graft is put in a gauze handkerchief moistened with normal salt solution and, to avoid drying, is transferred as soon as possible to the site of the implant. The bone ends have previously been freshened, all fibrosed tissue has been removed and longitudinal scarifications of periosteum on fragments made to produce reactive stimulation and to open up vents for new circulation."

Epicondyle Fracture.—I. Zadek (*American Journal of Surgery,* September, 1925) states that fracture of the medial epicondyle should be treated with the elbow in full extension, for in this attitude the carrying angle can be properly restored. One cannot be certain of its restoration with the elbow treated in flexion. It is stated that the elbow should be immobilized in flexion to relax the attached muscles and prevent displacement of the fragment across the front of the elbow joint. Practically there is no tendency to displacement some days after injury.

Supracondylar osteotomy for correction of cubitus varus is likely to be unsuccessful if attempted correction is made with the elbow flexed—an attitude used by some operators, probably on the general rule that all fractures at the elbow, except those of the olecranon, should be treated in an attitude of flexion.

Amputations in Industrial Surgery.—W. L. Estes (*Annals of Surgery,* January, 1925) finds that amputations for industrial injuries owe their fatalities chiefly to loss of blood, or to other injuries received at the same time as the one requiring the amputation. The average death rate for single major amputation should, however, be low.

The surgeon should not amputate until the patient has reacted from shock. This will be indicated by the blood pressure. To avoid the danger of sepsis the operation should be done, if there is no strong contraindication within three hours after the injury was received. Care must be taken to control hemorrhage in delayed operation.

Synergic anesthesia seems to be best in operating for serious industrial injuries. Chloroform should never be used, and only little, if any, ether.

In common with all other industrial injuries there should be for "amputated" men a period of rehabilitation in the hospitals. The stump should be exercised, massaged and manipulated so that it shall be prepared for wearing and using properly a prosthetic apparatus. Artificial limbs should be applied just as soon as the stump is solid enough to bear them or bear upon them. For a leg or thigh amputation, the artificial limb should be worn within two months after the operation. It is true that the stump does shrink after a little while, but so do the unused muscles of the extremity. If the false limb is delayed for four to six months there will have occurred so much atrophy that the stump will be too weak properly to operate the rather heavy false limb.

Final compensation adjustment should be delayed for at least two years after an amputation, for the majority of work people will be able to earn quite as much as they did before the injury, by this time, if they have lost one leg or a part of one lower extremity below the mid thigh region No prosthetic appliance can fully or nearly fill the need of a lost upper extremity.

Amputations of forearms and upper arms produce as a rule irremediable disability, but the person who has lost an upper extremity may learn to do many things by the use of very homely and sometimes homemade prosthetic apparatus. No apparatus which imitates the appearance of a lost hand or forearm is ever of any great use in the everyday duties of a workman. Homemade hooks and clamps, which may be inserted or fastened to the end of a simple socket fitting over the stump of an arm, assist greatly and are useful helps in doing a workman's daily employment.

New Method of Reducing Dislocated Bones.—C. C. Booth (*International Journal of Medicine and Surgery,* February, 1925) describes a method for use when extreme flexion under ether fails of accomplishment. It was first employed upon a wrist thus:

Making a Crile dissection, the author exposed the anterior edge of the semilunar bone without the least difficulty. He then inserted the small end of an Allis dissector above the edge of the crest of the bone, and pushed against the bone and with very little effort tipped it backwards beneath the os magnum. Many short bones and short pieces of long bones can be reduced to normal location by this method with a very small skin incision. The key to this treatment is the stereoscopic x ray examination.

Fractures of the Femur.—J. E. Cannaday (*International Journal of Medicine and Surgery,* January, 1925) states that when pain results during the early period of traction, it is due either to defective technic of application or to improper care of the patient afterward.

The objection has been made that calipers may cause the development of a bone sinus. If the caliper is driven in too deeply, this may result, but if it penetrates only through the bone cortex and stops there, there can be no such thing as the development of a sinus.

The author's observations lead him to believe that the tertiary form of syphilis can be entirely ignored during the treatment of a fracture.

The most important consideration in regard to the treatment of a fracture of the femur is the early application of traction before there has been time for muscular contraction to take place. This he considered exceedingly important. He believes that occasionally even yet someone will advise that the fracture wait for a day or two until some of the soreness leaves. By that time the patient's muscles have contracted to such an extent that twenty-five to fifty per cent more weight will have to be applied in order to draw them out to their full length again.

Newer Methods for Nonunion of Fractures.—R. T. Taylor (*Surgery, Gynecology and Obstetrics,* June, 1925) asserts that many methods have been employed to hasten and even to produce union in congenital pseudoarthrodeses, delayed union or nonunion in bones, but the one that chiefly commends itself to consideration is one that furnishes tissue rich in osteophytes and other osteogenetic agencies or forces, such as the osteoperiosteal graft which obeys biological and physiological requirements plus rigid and prolonged mechanical fixation, as obtained by a boneclamp, that will assure alignment and at the same time not interfere in the least with the blood circulation in bone or periosteum.

It is conceivable that we may secure this by means of both a combined Albee inlay and Delagénière osteoperiosteal graft, as one or separate elements. The latter needs no explanation, but the former may be obtained by lifting laterally an osteoperiosteal graft and then with the electric saw going through the whole thickness of the bone into the medulla to secure the inlay element, all in one piece.

Displacement of Semilunar Carpal Bone.—J. D. Adams (*Journal of Bone and Joint Surgery,* July, 1925) states that a true dislocation of the semilunar carpal bone occurs only when it becomes extraarticular, namely, when its relationship with both the os magnum and radius has been completely disturbed. The persistent dorsal displacement of the midcarpal row produces a permanent disability in the wrist. In the early instances it may be restored to normal position, but if allowed to remain is extremely difficult, if not impossible, to cure. Closed reduction should be attempted only within forty-eight hours of the injury, and then with extreme caution as to traumatizing the flexor tendons and the articular surface of the carpal bone. Open reduction is attended with a great deal of danger of traumatizing the articular surface of the flexor tendons. The convalescence is long and the end results unsatisfactory. Removal of the bone should be done in all cases where dorsi and palmar flexion are limited to the extent of interfering with the patient's work. Early motion following operation should be emphasized. In cases where the interim between injury and operation does not permit of the closed reduction method and where the rotation on the radial articulation is not sufficient to cause displacement of the articulation with the os magnum, thus leaving a sufficient function in flexion and extension, the operator should carefully consider nontreatment.

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Medicolegal Notes.

TESTIMONY AS TO INJURY BASED PARTLY ON INFORMATION FROM OTHERS HELD INADMISSIBLE

In a personal injury case, a medical witness, who had examined the plaintiff for the purpose of qualifying as an expert witness as to her condition, after being asked whether he made any examination with reference to the then bladder condition of the child and answering in the negative, was asked whether he had at that time obtained a history of the case, and answered that he had, from the child's father and stepmother. He was then asked whether from the history so received and from the examination he made he could say whether or not there was a subsisting injury to the bladder. The New Jersey Supreme Court holds, Altieri v. Public Service Ry. Co., 128 Atl. 547, holds that the last question and the answer that there was such an injury, were improperly admitted, under the rule that the testimony of a medical expert as to the condition of a plaintiff, based partly on information received from third persons, is incompetent, where the expert has been employed to make an examination of the plaintiff solely for the purpose of qualifying him as a witness, and not for the purpose of treating the patient.

DEGREE OF SKILL IN DIAGNOSING FRACTURE

In a malpractice action for injuries received in the treatment of a dislocated arm, which defendant claimed to be a Colles fracture, there was much evidence tending to show that plantiff actually sustained a Colles fracture, but there was also evidence that the injury was a dislocation of the ulna. Defendant admitted that he did not discover the dislocation of the ulna if any, and the fact that it had broken loose from the radius. There was evidence that the treatment in either case would be different.

Reversing judgment for plaintiff, the Missouri Court of Appeals said, in part: "Of course, defendant was liable if he failed to use that degree of care and skill of the ordinary physician of similar localities in diagnosing or discovering the true condition of plaintiff's arm. But there should be some testimony tending to show that a physician of ordinary skill in the locality in question, and by the means at hand, could have discovered the dislocation differentiated between it and a Colles fracture; or whether or not a physician of such skill should have waited until the swelling subsided (if it would) before determining upon the character of the injury, or whether, if he was in the exercise of ordinary care in diagnosing the trouble as a Colles fracture under the circumstances, he should have made a further examination after the swelling had subsided."

RATIFICATION OF UNAUTHORIZED DEED BY HOSPITAL'S PRESIDENT

The Missouri Supreme Court holds, Josephine Hospital Corporation v. Modoc Realty Co., 270 S. W. 638, that the fact that the trustees of a hospital for a period of years left the entire management and control of the hospital and its property to its president, gave him no authority to convey its real estate without express authority from the trustees. Such a deed was not sufficient to bind the hospital and could have been set aside by timely and appropriate action on its part. But where the majority of the trustees knew of the deed and took no action to set it aside for twenty months after such knowledge was acquired, the rights of third parties having intervened, and the hospital having got the benefit of the proceeds of the sale, the hospital was held to be estopped by delay, neglect, and laches of its trustees to say that the deed was unauthorized and insufficient to convey the title of the hospital, and that the trustees had thereby ratified the deed.

LIABILITY FOR LEAVING SPONGES IN WOUND

The Arkansas Supreme Court holds, Spears v. McKinnon, 270 S. W. 524, that in an action against two physicians for malpractice for failing to remove a sponge from the abdominal cavity after an operation, one of the defendants could not claim exemption from liability on the ground that he was assisting the other defendant, who had not instructed him to search the abdomen for sponges after the operation, where the evidence showed that his part in the operation was to insert and withdraw the sponges. It was held that the defendant's liability was joint and not several, and a verdict of "$3,500 against Dr. S. and the sum of $3,500 against Dr. P." should have been followed by a joint judgment against defendants for $3,500 and not by a judgment for $7,000, one-half to be recovered from each defendant. The court applied to the facts of the case the rule that surgeons cannot relieve themselves from liability to a patient for injury caused by leaving a sponge in the wound after an operation by adopting a rule requiring the attending nurse to count the sponges used and removed and relying on such count as conclusive that all sponges have been accounted for.

QUALIFICATION OF EXPERT ON EFFECT OF STRYCHNINE

The Texas Court of Criminal Appeals holds, Hext v. State, that, in a prosecution for murder by poison, a physician may qualify as an expert witness as to the effect of strychnine poison on knowledge obtained from the study of books upon the subject without showing personal experience.

INSUFFICIENT EVIDENCE OF HOMICIDE

The Texas Court of Criminal Appeals holds, Vancel v. State, 272 S. W. 130, that in a prosecution for murdering a week old baby, the testimony of a physician was insufficient to sustain a conviction where it did not show whether the child died from some criminal means or agency or from natural causes. Mere motive and other circumstances pointing to one as being likely to commit a homicide are not sufficient to sustain a conviction.

CERTIFICATE OF DEATH EXCEEDING AUTHORITY OF STATUTE HELD INADMISSIBLE

The Mississippi Supreme Court, Massachusetts Protective Ass'n v. Cranford, 102 So. 171, holds that, in an action on an accident policy involving the issue of whether the insured committed suicide or met his death accidentally, a certificate of death issued by the bureau of vital statistics under Hemingway's Code, Sec. 4872, stating that the death was "suicidal," was not admissible, since the certificate should have merely stated that the cause of death was a gunshot wound. The authorized purpose of the certificate was to do no more than state the cause of the death, as by a gunshot wound as in this case, and not whether the wound was inflicted by any certain person, by assassination, by accident or by intentional selfdestruction. The court did not find it necessary to decide whether such certificates are ever admissible in such cases.

DEGREE OF CARE AND SKILL REQUIRED

The Vermont Supreme Court holds, Parker v. Bowen, 126 Atl. 522, that the standard by which the work of a physician charged with malpractice is to be judged is the care and skill usually exercised in like cases by physicians and surgeons in the same line of practice in that general neighborhood, and he is not to be judged by what a medical witness testifies he would have done in circumstances shown by the evidence.

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On the Relations Between Physician and Patient

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INTRODUCTION

Physicians and patients come in contact with each other almost daily. There are questions arising on either side requiring elucidation. For this reason I may be permitted to sketch briefly my views on this topic.

MATTERS CONCERNING THE PHYSICIAN

While there is complete accord among physicians and surgeons with regard to the question as to what we should do for the patient, there is a great deal of discord as to what we should tell him.

The practitioner (physician and surgeon alike) is the custodian of his patient. He endeavors by all means known in medicine to restore health to the sick. He also tries assiduously to render incurable conditions more bearable, and to alleviate suffering. There is no controversy as to the duties of the medical profession with regard to its activity as given in the two preceding sentences.

The question, however, what we should tell a patient, presents a more difficult problem. It is self-understood that like all honest persons the physician also likes to tell the truth. There would be no question about it, if this would be feasible and not interfere with his duties toward the patient. But alas, the two items: "truth and welfare of patient" frequently conflict with each other and work in diametrically opposite directions.

Before deciding what is best to say it will be well first to state what the practitioners usually do. We shall then discuss the reasons for and against telling the truth and try to select the best way as it appears to us.

Some of our colleagues do not hesitate to tell a patient what he is suffering from, no matter what effect it will have on him. They maintain: "We must tell the truth, no matter what its consequences may be." Even in fatal diseases, they give their exact diagnosis to the patient. Aside from the disagreeable sensations and the great harm done to a patient who is told that he is going to die within six months or so, such a diagnosis and prognosis may, by chance, not be correct. For mistakes can happen, no matter how careful the practitioner is: *"Errare humanum est."* In such an instance the true opinion of the physician, which in reality was not even the truth, has sometimes done even irreparable harm to the patient, and has brought discredit to the physician besides.

Some colleagues say we must tell the truth in order not to delay operative intervention, if feasible. This, however, is not a sufficient excuse for causing the necessary hardships to the patient by the true verdict. For he can be informed of a necessary operation by other milder means. Thus, for instance, a patient with an operable carcinoma of the stomach may be told that he is troubled with a certain variety of gastric ulcer requiring surgical measures for a quick and efficient recovery. He will usually consent to a surgical operation without suffering the fright of cancer.

The other colleagues who tell the truth whenever it can be done without harm, but refrain from it in all other instances, maintain that they have to act in the interest of the patient. It contributes greatly to his welfare, if he is not aware of the truth. The latter is usually told to the immediate family, a near relative or a friend, as the case may be. Thus the approval of the family is obtained, the truth known, and the best done for the patient.

While everybody is entitled to his own opinion, the question comes up, which party appears to act more judiciously, so that we may generally recommend its procedure.

Before discussing whether the truth should be told the patient under any circumstances or not, I may be permitted to make a few general remarks.

The art of medicine consists principally in studying the natural phenomena of the living organism and in helping to carry out Nature's intent. Thus, food, water, and air have to be present in certain quantities to make life possible. If the physician discovers a deficiency in the items just mentioned he can at times remedy this shortcoming by supplanting it. He will in this way create new conditions for a successful continuation of life. In disease also Nature paves the way for recovery and the physician tries to carry out Nature's intent. At times medicine removes barriers against life, which Nature was not able to abolish, and makes life possible. As an instance we mention complete obstruction of the esophagus and its cure by gastrostomy, or severe cardiospasm and its treatment by overdilating the cardia. Death would have resulted from lack of food. The procedures mentioned remove the barriers

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against the intake of food and make life possible according to Nature's requirements.

There is an innate desire to live in each organism. Even the aged and decrepit and the incurably diseased cling to life. Nature has provided us with this sensation in order to enjoy every minute of our existence. In times of sickness and suffering Nature frequently masks the real condition and imparts hope and a favorable outlook for the future. In a busy practice of over forty-one years I have seen but a few instances of moribund patients who were aware that they were going to die (amounting perhaps to one per cent.). The bulk of the dying patients, however, no matter what sickness they had gone through, acute or chronic, with great suffering or comparatively mild discomfort, are never aware of the coming end and die not knowingly. We come into the world without any knowledge of our existence and we leave it in the same manner.

This provision of Nature, not to let a living being know its coming end, we must carry out in like manner that we follow its laws and apply them diligently in the entire field of medicine.

In coming back to the original question, should a patient be told that his life is in danger or perhaps doomed? We must answer in the negative. For we physicians carry out Nature's intentions and follow its laws unremittingly. Everybody knows what harm can be done by one harsh disagreeable word, especially if it is true, and concerns life, the most valuable asset a living organism possesses. Not only must we try to dissimulate any idea of an approaching death, but we must also in other difficult situations always speak encouragingly to the patient. Anxiety and worry exert a depressing influence, while contentment and cheerfulness exert an exhilarating influence and pave the way for recovery where the latter is possible.

What if the patient asks directly for the truth? I personally would never give a death verdict to a patient, and would give hope and encouragement under all circumstances.

The physician treats his patient to the best of his knowledge and ability. If he thinks that in a special case more help can be obtained by expert advice he should inform his patient and suggest a consultation with the colleague he considers best fitted. Should the patient mention somebody else the physician should always accept his patient's suggestion. Everybody is master of his own life, and we have no right to interfere with the master's wishes. In the same way we may suggest an operation or some special method of treatment, but if the patient refuses to accept it, we may try and give our reasons for the suggestions, but we must accept and honor his opinion and treat him as best we can accordingly.

Any time the patient should desire to be treated by some other physician the attending physician should retire without any grudge, and should also resume the treatment in case the patient desires him to do so. The physician must put his own feelings in the matter in the background and act only in the interest of the patient.

MATTERS CONCERNING THE PATIENT

The custom of having a family physician has of late years been greatly interfered with, not always to the best advantage of the public. Now as in former times everybody should have his family physician. The latter should be his attendant and guardian in health and disease. In selecting a regular family physician honesty and conscientiousness play the leading role, ability the second. It cannot be expected that a physician can be an expert in all ailments. But the true physician—who looks after the patient with the same interest as he would like to be looked after himself—will know what to do when he notices his shortcoming. He will select additional help, whenever required. In order to obtain the best results the full confidence of the patient in the actions of the attending physician is an absolute necessity. The patient should endeavor to live up to the precepts of his advisor when well and especially so when sick.

Inasmuch as all the actions (words and deeds) of the family physician are calculated to do good, too much interference by the patient or the family is certainly not advisable. In case the patient or the family are in doubt whether the attending physician is on the right path, a consultation should be suggested and accepted by the physician in charge. If the confidence in the attending physician is not fully restored, it is better for the patient to select a new advisor. For with the lack of confidence no good will result either to the patient or to the physician.

The term of life not being known and a possibility of death always being present, it is desirable for everybody who has got a message to leave to posterity or any worldly goods to bestow to arrange that in writing in the form of a will, while yet in the best of health. From time to time such a will can be rewritten or additions made, as occasion demands. In this way nobody will be caught unprepared, and the good deeds planned during life, continued thereafter.

In conclusion, the following brief summary appears justifiable. By following the suggestions outlined, life will at times be prolonged and its enjoyment always enhanced. Thus a great boon will be conferred on the patient and much satisfaction, and a feeling of duty well fulfilled, bestowed on the physician.

20 East Sixty-third Street.

A Modified Mayo Umbilical Herniotomy.—C. A. Roeder (*Surgery, Gynecology and Obstetrics,* May, 1925) has devised a modification whereby the umbilicus may be saved, provided the umbilical hernia is not very large, the outline of the umbilicus not destroyed, or the abdominal wall not too fat. In this operation only one half the usual area of fascia is denuded of fat. This lessens the occurrence of postoperative fat emboli proportionately. For a varying length of time following the operation there is a palpable mass just beneath the remaining umbilicus which has been mistaken by examining physicians for a recurrence. This mass is the result of doubling of the abdominal layers which protrude the umbilicus just enough so that it is mistaken for a recurring hernia. This disappears in due time, however, leaving the region around the umbilicus with a normal appearance. The author says that he performed this operation eight times in the past five years with no recurrence to his knowledge.

Signs of Acute Proved Cases of Intracranial Hemorrhage in the Newborn*

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Intracranial hemorrhage in the newborn has been a recognized pathological condition since the time of Denis (1) in 1826. The few early writers on this subject as Denis (1), Billard (2) and Cruveilhier (3), have been entirely forgotten in their pioneer studies and it was not until the time of Little (4) that renewed vigor and interest had been somewhat engendered. Only after Little's (5) second paper has this condition become, what may be termed, a modern entity, namely, that physicians became aware of the existence of such a condition and yet, it was twenty-three years (6) before another important contribution in this field was received. The studies were still all of a postmortem nature. The clinical diagnostic acumen had not yet attained that degree of perfection whereby living patients suffering from intracranial hemorrhage at the time of birth could be diagnosed. It is reasonable to assume, since nothing had appeared in the literature until quite recently with reference to the clinical feature of this important condition, that the general feeling at that time must have been that all cases of intracranial hemorrhage in the newborn were necessarily fatal since clinical diagnoses were unknown. As we became more alert to the existence of intracranial hemorrhage in the newborn, diagnoses were being made in the late and moribund stages. This, however, was a step in advance since the clinical significance of what was formerly thought to be only a pathological entity was beginning to be recognized while the patient was still alive, even though death soon supervened. As evolution in any field is a slow process, so has the evolution of the recognition of the very mild and resuscitatable cases of intracranial hemorrhage in the newborn been a slow, tedious and much criticized process. Gradually, with the increase in the acuteness of diagnostic ability, physicians became more adept and more keenly alive and perfect towards detecting or rather suspecting early, mild cases of intracranial hemorrhage in these newborn babies.

During the past score of years individual case reports of the correct, early diagnosis of the less severe stages of this condition with the initial recovery of the life of the patient crept into the literature. Even though this was another great stride in the progress of the diagnostic evolution of this cranial birth trauma, yet it was felt that such cases were a rarity.

The obstetrician easily conceived how such craniocerebral accidents could occur in the difficult and prolonged labors, where perhaps instrumentation and directly applied mechanical forces and devices to a head were essential in the extraction, but to obtain such injuries in the socalled normal, uncomplicated deliveries, he viewed askance with doubt, suspicion, prejudice, contempt and ridicule. Still, it is laudable, enlightening and agreeably encouraging to note the conversion of the selfsame obstetricians who previously scorned, for they were the first to eradicate their own blemishes by permitting the study and the search for the truth.

Through the courtesy of Wilbur Ward, F. A. Dorman and C. G. Childs, Jr., all of New York, permission was obtained to conduct this research upon this subject at the obstetrical division of the City Hospital, Welfare Island, New York. At the outset it was the purpose of the investigators to determine solely the frequency of intracranial hemorrhage in the newborn. Thus with that intention in view, five hundred consecutive newborn babies were routinely lumbar punctured within the first forty-eight hours of life within forty-five hours. As our (8) studies progressed new facts and new findings presented themselves to us and many formerly established beliefs were destroyed and new ones created. Aside from the importance of the work itself, it was interesting to note that what was really considered as some of the most important factors in the production of intracranial hemorrhage in the newborn were in reality of little significance.

ETIOLOGY

It is the consensus of opinion of most workers in this field that the cause of intracranial hemorrhage in the newborn can be chiefly attributed to one of the following groups:

1. *Trauma.*—The traumatic group comprises those cases where the intracranial hemorrhage results from the mechanisms of labor. It need not necessarily be an abnormal factor in the delivery, as will be demonstrated later on, although this accident or complication is more likely to occur where the labor has been difficult due to some form of dystocia, whether it be maternal, fetal or placental in origin. The maternal contributions to dystocia that may lead to cerebral birth hemorrhage in the offspring are due to abnormalities in the uterine force and uterovaginal passage both of the bony as well as soft parts. In discussing uterine force we really refer to the character of the uterine contractions and the type of labor pains with their ultimate results. The fetal responsibilities are found in the disproportion between the size of the child and the birth canal, or in abnormal presentations where the head will of necessity be subjected to a prolonged and protracted labor with its concomitant results. Certain forms of placenta previa will act in the capacity of an obstructing agent and in this manner will lengthen the actual time of the delivery. The significance of this fact is that further moulding of the head is required before delivery can be completed and in some instances an interference with the fetal blood supply is produced which materially enhances the danger of a congestion which in itself is conducive to hemorrhagic extravasations.

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2. *Asphyxia.*—Increased congestion arising from whatever cause produces an increased intravascular tension as well as an increase in the asphyxia. The heightened pressure within the delicate vessels eventually produces a rupture followed by hemorrhage of varying degree.

3. *Hemorrhagic disease of the newborn.*—This condition, according to our findings on the coagulation of the blood, has been unduly overemphasized by the pathologist and pediatrist. In this series only one case had a prolonged coagulation time, namely ten minutes. It may be, however, that sufficient time had not been permitted for the condition to display itself in the legthening of the coagulation time as all these blood readings were done within the first forty-eight hours and Rodda (9) states that the prolongation in the clotting time does not appear before the third day, except in some instances where it is present as early as the sixth hour. Conkey (10) also is inclined to feel that the hemorrhagic disease theory has been overstressed to the exclusion of the obstetrical factors.

4. *Syphilis.*—Lues is usually an accommodating and innocent disease and often acts as a screen behind which ignorance at times can be successfully shielded and protected, since the Wassermann reaction is not entirely infallible in its results and an error of correction is possible in a certain percentage of negative reports; thus, one can still maintain and cling to the diagnosis of syphilis in spite of all the evidence to the contrary. This disease has been accused of being the etiological factor in the production of most diseases in medicine and so has it been accorded its prominence in this condition from time immemorial. These studies fail to substantiate that most fallacious and ancient supposition and contention, for in only six cases out of the entire forty-five bloody ones or 13.33 per cent. was syphilis present either in the mother or child. Yet, it can not be stated with absolute certainty that syphilis was the sole responsible factor in more than two out of these six cases, as the intracranial hemorrhage could have occurred as the result of the type of labor. The significance of this statement will be obvious later on. The labors in these six cases were as follows: Two medium forcep applications, one breech, one right occipitoposterior position, one low forcep application, and one left occipitoanterior position. Of these six luetic children, four were white and two were colored. As to race in this hemorrhagic series of forty-five cases, twenty-seven were white, or sixty per cent. and eighteen or forty per cent. were colored. Syphilis, therefore, occurred in 14.81 per cent. of the whites and 11.11 per cent. of the colored. The common conception that syphilis is more prevalent in the colored race can not be supported by this work. The significance of these findings merely confirms the impression insinuated above that as a causative factor in the production of intracranial hemorrhage in the newborn, syphilis plays but a minor role.

Race (total)		*Positive Wassermann (total 6 cases)*	
White	*Colored*	*White*	*Colored*
27	18	4	2
or	or	or	or
60 per cent.	40 per cent	14.81 per cent.	11.11 per cent.

5. *Pituitrin.*—This powerful oxytocic drug has been regarded by Ehrenfest (11), Lippman (12), Sidbury (13), Neff (14), and Porter (15), as an important factor in the production of intracranial hemorrhage in the newborn. Conkey (10) supports Ehrenfest (11), in the belief that vigorous methods of resuscitation aggravate and increase the size and signs of dormant and concealed intracranial bloody extravasations.

FREQUENCY OF HEMORRHAGE IN THE VARYING TYPES OF LABOR

In a series of five hundred consecutive newborn babies a routine diagnostic lumbar puncture was performed within the first forty-eight hours after birth. It was indeed a great surprise when it was learned that forty-five babies or nine per cent. of the series contained blood or blood elements in varying degree in the spinal fluid. The clinical pictures in these forty-five cases varied markedly in most instances; in some, bloody cerebrospinal fluid was the only indicator of the intracranial lesion, whereas in others, the clinical signs were manifested on a sliding scale ranging from those mild and easily overlooked to those which very obviously pointed to cerebral irritation. The type of labor played a most important part in the etiology of the production of the intracranial trauma. A short résumé of the different types of labor which occurred in this particular series with its corresponding percentages of intracranial hemorrhage is most enlightening and startling as well as interesting and significant.

Of 395 normal deliveries, i. e., left occipitoanterior and right occipitoposterior position, only twenty-two cases or 5.56 per cent. disclosed bloody cerebrospinal fluid of some degree. Another extremely important feature which destroyed one of the solid pristine beliefs was the observation that only three out of forty-three cases of properly applied low forceps showed evidence of blood in the cerebrospinal fluid at lumbar puncture. The percentage in this group was 6.97 per cent., only 1.41 per cent. greater than the most easy and normal method of delivery. The results of medium forcep applications were more striking but not entirely unexpected or unwarranted from such a procedure; 100 per cent. bloody fluid was displayed at spinal puncture. There were four cases in all. Only two cases represented right occipitoposterior position and of those 1 or 50 per cent. had bloody spinal fluid.

This perhaps would be more expected or anticipated as the degree of moulding must of necessity be greater and the uterine contractile forces more powerful to overcome the disadvantageous position of the fetus. Precipitate labor has always held its attraction for both doctor and patient and was considered a most welcome procedure; the mother was soon rid of her pain and suffering while the physician escaped the long tedious hours of waiting. Yet in our series 25 per cent. (two out of eight cases) of the children had been traumatized by an intracranial hemorrhage. Premature delivery, aside from the danger of incomplete development of the individual, subjects an unfinished product of conception to greater risks of trauma since the unprepared body must be ready to combat the same forces and withstand the same vicissitudes of nature as the normally developed one. Four out of eleven babies or

36.36 per cent. gave evidence of bloody spinal fluid at the lumbar site. Of twelve breach deliveries, three or 25 per cent. had bloody intradural fluid. In thirteen cases of prolonged labor four or 30.76 per cent. were found with the intracranial complication of hemorrhage. In three dry labors, in four cases of face presention and four cases of eclampsia or pre-eclamptic state, there was one case in each group that had bloody intrathecal fluid. The percentages were respectively 33.33, 25 and 25 per cent. In one case of Cæsarean section, one case of induced labor and seven cases in which the presention was not mentioned, the cerebrospinal fluids were normal. A fact of great importance noted in this series was the finding of clear fluid in all three cases of stillborn babies.

Type of Labor.	*No. of Cases.*	*No. of Hemorrhages.*	*Per-centages.*
Normal labor (left occipitoanterior and right occipitoanterior	395	22	5.56
Low forceps	43	3	6.97
Medium forceps	4	4	100.00
Right occipitoanterior	2	1	50.00
Precipitate	8	2	25.00
Breech	12	3	25.00
Premature	11	4	36.36
Prolonged	13	4	30.76
Dry	3	1	33.33
Face	4	1	25.00
Eclampsia or preeclampsia	4	1	25.00
Cæsarean section	1	0	
Not mentioned	7	0	
Induced labor	1	0	
Stillborn	3	0	

In these forty-five proved hemorrhagic cases an initial mortality of four or 8.88 per cent. was present. Postmortem examinations in three cases revealed extensive supracortical hemorrhage in one case, ventricular hemorrhage in another and supracortical, basal, ventricular and spinal in a third and autopsy was refused in the fourth.

SIGNS IN OUR CASES

The paucity of signs in this condition makes it very difficult at times to diagnose with any degree of surety many of the milder cases of intracranial hemorrhage in the newborn. On the other hand, neither does the presence of signs always signify the existence of an intracranial bloody extravasation. In this series a total of thirty-five signs were observed in eighteen patients or 40 per cent. of the total number, the other twenty-seven patients with hemorrhage or 60 per cent., failed to evince any indication of an intracranial complication and would have been overlooked in all probability if a routine lumbar puncture had not been performed. Whether any resultant defects would have occurred in any of these latter twenty-seven cases if the pathology had not been discovered is a question which is unanswerable satisfactorily at present, for no doubt many mild cases of intracranial hemorrhage grow up without any abnormalities, the blood having been absorbed completely. To be able to determine in advance which case will require lumbar drainage or even cranial drainage and which case will take care of its own hemorrhage is a difficult problem. All that can be offered at present from past experiences is a formulated plan, which has been adopted for the present and is subject to change depending upon the individual case, when cranial drainage should supersede lumbar drainage; but to differentiate cases which require spinal drainage from those which require no drainage at all is at present impossible. Thus, until our prognostic ability becomes so highly developed and perfected as to be capable of selecting or separating those cases which require treatment from those cases where Nature's own methods are sufficient to absorb the blood without the danger of any residual impairment, it is more advisable to drain by repeated lumbar punctures all cases showing bloody cerebrospinal fluid until the fluid becomes clear.

The signs which are to be discussed in this paper occurred within the first forty-eight hours of life and were chiefly in the milder types of cases. That this condition in the newborn is of utmost importance, we need only refer to the recent opinions of Schwartz of Berlin (16) and Fischer of Basle (17). The former stated that intracranial birth injuries completely dominated the pathology of the first month of life and the latter author placed the responsibility of cerebral birth trauma as the cause of ten per cent. of the deaths during the first month of life: and those were the reports of pathological studies. How many more cases of milder degree escape unnoticed, such that could produce the varying forms of plegias, as diplegia, hemiplegia and paraplegia with or without mental deficiency?

The most frequently observed sign in this series was twitchings of the hand. That occurred in five cases or 27.77 per cent. Twitchings of the feet were noted in four instances or 22.22 per cent. Cyanosis, poor nursing, convulsions, unusual drowsiness were each present three times or 16.66 per cent. Rigidity of the extremities, jaundice and respiratory difficulties were recorded as each being present twice or 11.11 per cent. Twitching of the mouth and face, epistaxis, a weak cry, vomiting, frothing at the mouth, failure to cry and supranuclear facial palsy were each present once or 5.55 per cent. The intracranial pressure as determined by the spinal mercurial manometer (18) was increased in twenty-six or 57.77 per cent. The bulging or tense anterior fontanelle was not found to be a reliable indicator of the existing intracranial pressure, for in only five cases did the increased manometric reading verify and substantiate the condition inferred from the state of the anterior fontanelle.

Capon (19), in a clinical study of cases which eventually came to autopsy, recorded such signs as oral pallor, nystagmus, ocular palsies, pupillary inequalities, myosis, ptosis, yawning, sighing, automatic muscular movements i.e., alternate closing and opening of the eyelids, exaggerated reflexes, erection of the penis and wrinkling of the scotal skin as additional signs to some of those enumerated above by us. His cases, however, were all fatal, whereas we dealt almost exclusively, with the exception of four cases, with the milder type of intracranial hemorrhage which survived either as a result of the repeated lumber drainage or would have recovered anyway as far as life is concerned.

DIAGNOSIS

Whenever a newborn baby shows any one or a combination of any of the mentioned signs, and

particularly so if they should follow a type of labor where the percentage of intracranial hemorrhage in the newborn as a complication is relatively high, it is advisable to perform a lumbar puncture for diagnostic purposes. A word about this procedure may not be amiss.

There is practically no danger entailed in the performance of this test if certain few rules are adhered to. The first and most important one is always to remember never to do a lumbar puncture if the patient is in shock, for whatever information may be derived from the findings of the spinal fluid, it is not going to be of any material clinical assistance as far as therapeutics are concerned, if the baby is unable to overcome its shock. The added trauma of spinal puncture, however slight, will certainly not decrease the shock. After that period of depression is over, then resort to this diagnostic means. To perform a lumbar puncture in a newborn baby is not as simple as it may appear, yet after a certain amount of experience it becomes almost as easy as in the adult. A great deal of the success in entering the vertebral canal depends upon the degree of flexion of the spinal column obtained by the aiding nurse. Once the technic is mastered the rest of the difficulties are overcome.

If a cerebral hemorrhage has been discovered then spinal drainage can be immediately instituted and repeated according to the severity of the extravasation. The finding of clear spinal fluid in a small percentage of cases, similar to a negative Wassermann, does not entirely eliminate intracranial hemorrhage. I have had that experience twice, once in an acute case and once in a chronic one.

I was asked to perform a lumbar puncture upon an acute case with the following history: The baby, born May 26, 1925, at 3 a. m., at the Nursery and Childs Hospital, was a case of prolonged labor with eventual breech extraction. The resuscitation was difficult, although no heroic measures were taken and asphyxia pallida was present. At 8 a. m. that same day, general convulsive twitches were observed, the eyes were held open, the child was in a stupor and unable to nurse. This continued all day. On the 29th, at 9 a. m., three days later, the condition had become markedly worse so that Cheyne-Stokes respirations were noted and the respirations at times ceased entirely; the cardiac beat was almost imperceptible. Two hours later, i.e., at 11 a. m., that day, I did a lumbar puncture on a child who was fairly cyanotic and whose body was cool. It did not require much diagnostic ingenuity to make a diagnosis of intracranial hemorrhage in that particular case. Yet, how amazed we all were when the spinal fluid at the lumbar site was clear and not under pressure! The child died and at autopsy an intracranial hemorrhage was found, the source of the bleeding having arisen from a laceration of the marginal sinus.

Another instance was that of a chronic case at which I assisted at the operation. That baby had had a lumbar puncture performed on the third day by the doctor who referred the case and who had obtained clear cerebrospinal fluid. The operative pathology was that of a residue of a former intracranial hemorrhage with increased intracranial pressure.

Thus, one can state with a fair degree of assurance that, with the exception of a small percentage, clear cerebrospinal fluid obtained at lumbar puncture in a case suspected of possessing an intracranial hemorrhage eliminates that possibility from further consideration.

TREATMENT

The treatment consists of repeated lumbar punctures every six to twenty-four hours until clear cerebrospinal fluid is obtained depending upon the degree of severity of the hemorrhage, i.e., the greater the percentage composition of blood in the cerebrospinal fluid the oftener the lumbar puncture must be repeated. If within three or four days of such treatment, the character of the cerebrospinal fluid remains unaltered, or it appears that little or no benefit is being derived from lumbar drainage, then cranial drainage must be instituted.

The follow up work in these City Hospital cases is very unsatisfactory as cooperation is very poor on the part of the parent, but every effort is being made to secure the present status of each child. Thus far about eight mothers have responded to our letters and of those one child died in a hospital from which we are endeavoring to secure the cause of death as well as the physical and mental state of the child at the time of admission to that hospital. The other seven children are perfectly normal with the exception of one, two years old, that has not made much progress in speech outside of uttering ma-ma and pa-pa.

SEQUELÆ

Improperly or insufficiently treated cases may result in the varying forms of spastic paralysis with or without mental impairment ranging from simple retardation to idiocy associated with or without epilepsy. Another sequel recently discovered by the author and discussed (20) elsewhere in detail is that of hydrocephalus either of the communicating or complete internal types. The case responsible for the discovery was that of a severe intracranial hemorrhage seen six hours after birth and at which time a fatal prognosis was given. With the aid of repeated lumbar puctures the child however survived, but the entire hemorrhage had not been drained off. The clinical picture was so favorable at the end of the fourth day that the advice to institute cranial drainage was not accepted. At the end of one month the child was considered quite normal by the pediatrist. At the end of the second month the child had a typical communicating hydrocephalus with an enlarged head, separated cranial sutures, increased intracranial pressure, the anterior and posterior fontanelles enlarged and communicating.

SUMMARY

In summing up the clinical situation of this condition, it may be said that whenever any of the signs referable to intracranial hemorrhage, no matter how mild the case may be, make their appearance and especially so if the labor has been at all conducive towards the production of intracranial hemorrhage, a lumbar puncture for diagnostic purposes should be performed. If hemorrhage is present, repeated spinal drainage should be attempted without any further loss of time. If that treatment is insufficient

cranial drainage must be resorted to in order to prevent any of the sequelæ that are possible.

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The Soft Palate as a Place for Signs of Disease*

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Several years ago, four parallel series of observations were the occasion for attributing a special symptomatology to the soft palate and for closer observation.

1. In line with certain erythremic conditions, it was observed that the number of erythrocytes did not by any means run parallel with the erythremic discoloration of the soft palate. On the contrary, more frequently than could be ascribed to an accident, there was found a considerable red discoloration of the soft palate without the presence of a large number of red cells in the peripheral blood, and, inversely, a not very marked red discoloration with a strikingly high erythrocyte count. Furthermore, it was also demonstrable that it was mainly the soft palate and positively not the rest of the oral mucous membrane, which showed striking changes even with slight conditions of erythremia.

2. Cases of icterus, observed continuously especially in parenchymatous disease of the liver, showed that the soft palate alone and on the very site where it joined the hard palate, contained the pigment for the longest time, and even that the yellow discoloration became still more intense at this site in the course of time.

3. Cases of duodenal ulcer not infrequently showed a true and even considerable polycythemia. Such a polycythemia in duodenal ulcer has previously been observed by G. A. Friedman (1). As a result of the red discoloration, which was sharply limited by the hard palate, the soft palate in every case showed a very slight polycythemia. An entirely new feature, however, was the fact that the soft palate showed an erythremic discoloration without a demonstrable evidence of an increase in the red blood cells. It was therefore assumed as probable that the duodenal ulcer was associated with an increased amount of blood only in certain portions of the intestinal tract, being especially recognizable in the soft palate.

4. In cases of pancreatic disease (inflammation, necrosis) there was observed a characteristic bronze discoloration, which was entirely different from the usual yellow discoloration in liver and gallbladder diseases.

These observations led to the investigation of the recognizable characteristics (with the naked eye) of the mucosa of the soft palate. It was found that special attention must be paid to the following features: 1, the color; 2, the amount of blood present; 3, the water fat content, and 4, the marking. As a result of these experiences characteristic changes were recognized in a number of disease pictures especially cited later on. The significant feature of them all was the fact that they were all disease conditions in the intestinal tract or its accessory glands (liver and pancreas). This fact undoubtedly demanded a special explanation. Such an attempt will be mentioned later.

A number of selected cases (sixty-five in all) were carefully examined in order to determine the most characteristic findings in the soft palate. The disease pictures were the following:

A. Icterus: In fact, this is not a disease, but only a symptom, nevertheless it is advisable to call attention to the most characteristic discoloration in this condition, namely, the yellow color of the soft palate (like all changes, most distinct at the angles on each of the raphé at the border of the hard palate). Certain differences were found in regard to the etiology and pathogenesis of the disease that leads to the icterus: Catarrhal icterus shows the least and the least permanent changes; the icterus of gallbladder disease or occlusion of the biliary passages shows a distinct and sometimes intensive yellow color, but this is confined to the angles; the most extensive changes are seen in icterus due to a parenchymatous disease of the liver, in which the yellow color begins to tinge the soft palate diffusely. In such a case a fatty infiltration of the soft palate is also demonstrable. These changes appear even without

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the development of a general icterus. The importance of these changes was evident especially in diseases of the gallbladder, then diseases of the liver in the course of syphilis and in intrafetal disease of the liver in very young infants.

B. In acute pancreatitis there was a most characteristic bronze discoloration, with the same localization as the yellow. With the aid of this symptom the diagnosis was established in three indefinite cases, and in one case the previously made probable diagnosis of acute pancreatitis was corrected by the absence of this symptom. All of these diagnoses were verified at necropsy.

C. In duodenal ulcer the hyperemia of the soft palate (even without peripheral polyglobulia) served as a common and good differential sign against gastric ulcer. The latter just like the peptic ulcer of the jejunum, and appendicitis, showed a nonhyperemic and, on the contrary, a more or less pale soft palate.

The explanation is based upon embryological facts. The ectodermal and entodermal folds meet somewhere in the mouth. Their point of union lies in the plane that runs anteroposteriorly and from below upward and cuts the roof of the mouth somewhere in this manner. The fact that all of the diseases mentioned affect the intestinal tract and its accessory glands leads to the probable conclusion that the borderline between the hard and soft palate is identical with the borderline between the ectodermal and entodermal folds. Accordingly, the soft palate is to be considered as entodermal and its changes in the changes of the intestinal tract might be based upon their relationship.

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The External Respiratory Mechanism in Injury and Disease

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With the light that has come through recent researches the external respiratory mechanism renews its bid for the attention of the clinician. By means of transections of the brain stem Lumsden (1, 2, 3) has been able to differentiate at least three subdivisions of the respiratory centre, viz.: 1, the gasping centre situated caudad of the striæ acusticæ; 2, the apneustic (inspiratory) centre at the level of the striæ acusticæ, and 3, the pneumotaxic (expiratory) centre in the upper pons. Each of these centres mediates a distinct type of respiration, viz.: 1, the gasping type in which inspiration and expiration are of short duration with a long post expiratory period of rest; 2, the inspiratory type in which prolonged inspirations (apneuses) occur the muscles of inspiration remaining contracted at the height of inspiration; 3, the type with prolonged inspiration and expiration as observed after double vagotomy. The gasping centre is stimulated by lack of oxygen and by vagotomy and the apneustic centre by excess of carbondioxide and by lack of oxygen. Severe lack of oxygen may cause failure of tonic apneusis and induce gasping. Vagus stimulation acts as a depressant and also inhibits tonic apneusis. The pneumotaxic centre is stimulated by excess of carbondioxide, the presence of oxygen acting only as a depressant and tending, when in excess, to impair the vitality of the centre. Vagus stimulation inhibits the pneumotaxic (expiratory) centre. It also inhibits apneusis. Vagotomy releases and prolongs active expiration. The foregoing statements taken from Lumsden's papers have in the main been verified in my experimental work upon this subject done with intermissions, at Fordham University during a period of fourteen years. The succeeding remarks are by way of introduction to the clinical utilization of the laboratory findings.

The centres at the different levels evidently constitute an ascending, integrating series. In all such integrations each member of the series partially inhibits the member immediately below it and at the same time imposes its own, more differentiated form of functioning upon the active remnant of the more primitive mechanism. In this way each higher member rids itself by inhibition of what is cumbersome or useless in the more primitive mechanism while retaining what is essential and cooperative. In the lowest of the experimental series, i. e., in the gasping centre—activation is mainly chemical as opposed to reflex. The neural elements involved act merely as conductors, the musculature innervated by them executing movements akin to the most primitive form of respiratocirculatory movements, viz., sequential, active, thoracoabdominal systole and diastole. In the highest of the series, i. e., in the pneumotaxic (expiratory) centre activation is both chemical and reflex but under ordinary conditions is preponderately reflex.

In the intermediate member of the series, i. e., in the apneustic (inspiratory) centre, activation is both chemical and reflex. In the normal animal all the centres are activated both chemically and neurally the lowest centre acting preponderately under chemical and the highest centre preponderately under reflex influence. In the intermediate centre the chemical and neural factors are more evenly balanced. All this merely implies that the centres are autochthonous (automatic) in so far as they are under chemical dominance and reflex in so far as they are under neural dominance, the series as a whole acting in the normal animal, when not interfered with by voluntary impulses, under the dominance of the predominantly reflex highest centre. Of clinical significance is the experimental differentiation of the highest (expiratory) centre and from the intermediate (inspiratory) centre since it not only verifies the observations of clinicians of an earlier day but also inspires those of the present day and supplies them with the means for more intensive observation of respiratory phenomena at the bedside.

CLINICAL APPLICATION

In the respiratory centres, as elsewhere, the higher, more differentiated mechanisms are less resistant to nocuous influence than the lower more primitive mechanisms. Hence when both sets of mechanisms are exposed to cumulative, deleterious effects the more differentiated mechanisms are the first to succumb and in case of recovery the last to resume full function. In accordance with this fundamental biological law I have found clinically, in both animals and men, that in the vast majority of cases of approaching death from illness the expiratory is the first centre to succumb. In laboratory animals after injudicious administration of ether the respiratory mechanism frequently halts at the height of inspiration (tonic apneusis) and all that is necessary to set it going again is to make artificial expiratory movements by manual compression of the chest. After each act of compression an act of inspiration immediately ensues in such a manner as to leave little doubt that the chest compression was its immediate excitant. If, however, the anesthesia be deeper the inspiratory centre may also be paralyzed and now the mere compression of the chest is not of itself sufficient to induce an immediate inspiration although each act of vigorous chest compression is always attended by a recoil inspiration which may be sufficient to maintain the vitality of the inspiratory and expiratory centres until these resume their function. Compare the Schafer method of artificial respiration. These conditions are of course to be distinguished from the respiratory failure in sudden inhibition deaths which occurred so frequently in the early days of chloroform and ether when the technic of their administration was not so well understood.

Of importance to the clinician is the *early recognition of beginning fatigue or failure of the expiratory centre* in acute or subacute illness and in the exacerbations of chronic disorders. The first indication of this is the apparent stress under which this centre begins to function as contrasted with the ease and quiet under which it functions normally. This stress is characterized by a prolonged, forced, active, one might say tonic, expiratory act in which the breath is expelled in a prolonged, more or less audible puff which is cut short by a sudden, quick, more or less exaggerated inspiration (with dilated nares) at the expense of the normal postexpiratory rest period. In this form of expiration the thoracic and abdominal musculature is palpably and visibly brought into play to effect thoracoabdominal systole. This prolonged, active expiration represents the attempt on the part of the expiratory mechanism to get rid of poisonous substances such as carbon dioxide, etc., which act as stimulants of the inspiratory and expiratory centres. It is identical with the "blowing off" of the physiologists, the puffy respiration observed by clinicians in conditions like uremia, and is a component at least in the prolonged expiration so long and justly regarded by clinicians with concern in cases of suspected subacute or chronic pulmonary disease. It may be observed at certain stages in almost any form of disease associated with chemical poisoning of the central nervous mechanism, e. g., diabetes, opium poisoning, etc., or in cases of mechanical interference with the respiratory mechanisms, e. g., increased intracranial pressure, etc. At almost any death bed it may be seen before the lapse into the gasping stage. In this latter, short, sudden, inspiratory and expiratory movements are made the mouth and nares opening widely and the larynx working towards the chest with each thoracoabdominal diastole (inspiration) reverse movements accompanying each thoracoabdominal systole (expiration). In gasping a long rest period follows expiration. As the precursor of death the gasping stage has naturally had at all times much interest for the clinician and so more or less detailed descriptions of it with observations as to its prognostic import have been handed down from the earliest periods of recorded medicine.

CLINICAL METHODS OF STUDYING THE RESPIRATION

Up to the present time respiratory derangements incidental to disease or injury have received but scant attention the observations recorded in the clinical notes and charts being for the most part but casual and superficial. Thus one finds recorded perhaps the rate and depth of the inspirations, or the Cheyne-Stokes type of respiration, or some modification of it; or the grunting respiration found in chest injuries and in certain types of pneumonia or pleurisy; or the slow respiration of opium poisoning, etc. But the clinician had to be satisfied with the mere recording of signs without making any attempt at mechanistic interpretation and consequently without recognition of the true import of the disturbances observed.

Alterations in respiratory rate and depth are of service in helping to differentiate for instance acute affections of the respiratory system from those located elsewhere in the body, an increased respiratory rate pointing generally to a lung affection (pneumonia, etc.) and a normal or subnormal rate in the presence of high fever pointing to disease elsewhere, e. g., acute otitis media and other conditions. Cheyne-Stokes respiration, like gasping, though easily recognized is usually a preterminal condition and more or less hopeless from the therapeutic viewpoint. The grunting respiration of pneumonia is chiefly the result of insufficient aeration the grunting being nothing more than forced active expiration to get rid of the excess of carbon dioxide which stimulates the inspiratory centre and indirectly induces pain. By inspection alone one may estimate the rate of the respiration and the relative duration of each of the respiratory phases.

It is preferable, however, wherever possible, to use a stop watch to count the respirations and to measure the duration of each of its component phases, viz., inspiratory, expiratory, and rest period. Thus, as I pointed out some years ago (4), one can fairly accurately measure the lapse of time, e. g., 1, from the beginning of inspiration to the beginning of expiration; 2, from the beginning of expiration to the beginning of inspiration; 3, the period of rest. One may measure from any starting to any suitable stopping point the object being to determine the duration of each phase. It only takes a few minutes to take the times from which one may obtain the average duration of each of the phases. The measurements can best be made by covering the patient's eyes, the physician sitting at the bedside and observing in a suitable, not too bright light, the movements of the exposed chest and abdomen. In cases

of active forced expiration the thoracoabdominal musculature may be seen and felt in active contraction. Another useful method is that of recording separately upon a revolving drum the movements of the chest and abdomen by a suitable arrangement of writing levers and a time marker. In Fig. 1 is shown a set of respiratory curves taken from a cat after transection of the brain stem just cephalad of the pons. The expiratory centre is intact but is working somewhat under stress. These tracings, which somewhat resemble those taken with the Marey pneumograph were made by levers attached by means of a simple device outside of the chest and abdomen.

A similar contrivance has been used clinically by me but it has no advantage over inspection and measurement by the stop watch, except for purposes of demonstration, etc. The upper curve represents the abdominal and the lower the thoracic movements. Time seconds. The up stroke (expiration) shows a prolonged expiratory phase during the greater part of which the thoracoabdominal muscles were seen and felt to be actively contracting. By the stop watch the average of the times caught were as follows: 1, From the beginning to the end of expiration 8.4 seconds; 2, from the beginning of inspiration to the beginning of expiration 1.8 seconds; 3, rest period 0.6 seconds. Normally inspiration in man is set down by physiologists as of shorter duration than expiration. The ratio given, e. g., by Starling (5), Foster (6) and by Brubaker (7) is 10:12. Foster, however, takes care to say that expiration includes "such a pause as may exist," whereas Starling while giving the same inspiration-expiration ratio of 10:12 as Foster, admits a post expiratory rest period with a duration of about one third to one fifth of the total respiratory cycle. It must be kept in mind that these statements are based on tracings made by means of the Marey pneumograph which, in common with all similar instruments used in the graphic method, has the great defect of being unable to distinguish between active and passive movements. This difficulty is successfully met by the method devised by Head (8) in which tracings are directly taken from the anterior, tendinous portions of the diaphragm. These tracings show clearly that expiration is distinctly of shorter duration than inspiration with a rest period which has about twice the duration of inspiration and expiration combined. Head's method, however, does not record active expiratory movements.

For many years I have been seeking a satisfactory method of recording active expiratory movements with but little success. Some adaptation of Einthoven's string galvanometer seems to offer the only hope of solving the difficulty. For the present it must be said that by means of the clinical methods suggested by the author a much more correct estimate may be had of the active factors in respiration than by any of the graphic methods. In the pneumographs reproduced by Starling (5), Foster (6), and Brubaker (7), taken by means of the Marey instrument, there seems to be no rest period. But any one by means of a stop watch can easily measure a considerable period of rest in his own respiration or in that of other normal individuals; and in cases exhibiting prolonged forced active expiration one can see and feel the thoracoabdominal muscles in active contraction. The following figures represent the average duration of the respiratory cycle and of its different phases taken upon an average normal man:

From beginning of inspiration to beginning of expiration	3.48 sec.
From beginning of inspiration to beginning of expiration	.68 sec.
From beginning of expiration to end of expiration	.08 sec.
Rest period	.25 sec.

The total time for the separate phases is somewhat greater than the time for the respiratory cycle.

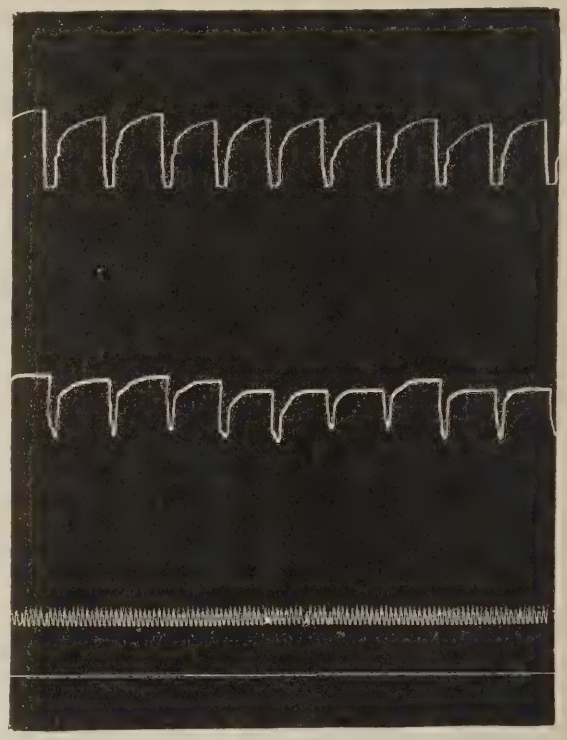

Fig. 1.—Prolonged active (fatigued) expiratory phase; partial apneusis from cat with brainstem transected just cephalad of pons; upper curve, abdominal; lower curve, thoracic movements; down stroke, inspiration; time seconds.

The difference is due to the time necessarily lost in starting and stopping the watch.

In diagnosis I have found analytical study of the respiration of service in the following conditions:

1. *Increased intracranial pressure.*—This is due to neoplasm, arterial hemorrhage, whether spontaneous or traumatic, edema cerebri or edema of repair caused by mechanical, toxic, or toxic infective trauma, increased secretion or diminished absorption of cerebrospinal fluid, etc. In any of these conditions prolonged forced expiratory phase may be detected long before the onset of the blood vascular and ocular phenomena set down in the textbooks as pathognomonic. On this account, from the viewpoint of diagnosis and therapy, analytical study of the respiration is of vital importance.

2. *Diseases of the heart and lungs.*—Any condition which interferes with the proper aeration of the blood thereby causing an accumulation of carbon dioxide in addition to lack of oxygen induces hyperactivity of the expiratory and inspiratory centres with early distress and exhaustion of the expiratory centre. In pulmonary conditions such as pneumonia, fibrosis, neoplasms and in pleuritic exudates, transu-

dates, etc., prolonged forced expiratory phase is early in evidence especially upon exertion. In cardiac disease this sign is elicitable quite early by having the patient perform light exercise. In asthmatic conditions whether of the cardiac or bronchial type the phenomenon is plainly in evidence. In suspected acute diseases of the lung the sign is invaluable in differentiating these from acute suppurative lesions elsewhere, e. g., in middle ear, etc.

3. *In disorders of metabolism.*—The study of the internal respiration (basal metabolism, etc.) has already more than justified itself. At the bedside, however, the clinician can no longer afford to overlook any diagnostic and therapeutic aid derived from analytical study of the external respiration. In conditions associated with acidosis prolonged forced expiratory phase is always in evidence and must ever be regarded as an ominous sign if the cause of the acidosis is not quickly removable. I have observed the sign in animals after removal of the pancreas and in patients suffering from diabetes. In one case, seen many years ago in consultation, the patient had just recovered from lobar pneumonia and the marked forced expiratory phase in the absence of fever and physical signs of consolidation, pleuritic exudate, etc., drew attention in the direction of a hitherto unsuspected diabetes. The family doctor had been misled by the fact that during the fever period of the acute chest condition there was no evidence of sugar in the urine. In uremic poisoning incidental to chronic kidney disease prolonged forced expiratory phase has been long familiar to clinicians. The sign, however, may be elicited in mild or latent uremia in the earlier stages when preventive therapy may be of lasting service.

4. *In poisoning* such as from opium, alcohol, ether, and other drugs prolonged forced expiratory phase is a prominent sign in the early stages.

THERAPY

In therapy analytical study of the respiration as set forth in this short communication has practical significance which cannot be overlooked.

1. *Oxygen administration.*—The presence of prolonged forced expiratory phase is a contraindication to the use of oxygen. This of course does not prohibit the use of oxygen but it implies that the oxygen must be diluted with air and that, if administered at all, the oxygen air mixture must be given intermittently. As previously stated prolonged, forced, active, expiration indicates an overworking pneumotaxic (expiratory) centre which is stimulated by carbon dioxide but depressed and vitally impaired by oxygen. The real therapy here would be the substitution of mechanical aids (rhythmic chest compression by hand or by other suitable mechanical apparatus such as that devised by me) to sustain or replace temporarily the overworking expiratory centre which otherwise must soon cease to function from exhaustion. In laboratory animals as well as in practice I have found this to be a remarkably efficient means for sustaining life and for resuscitation (e. g., after drowning, coal gas, ether, surgical shock, etc.), more especially when used in conjunction with rhythmic alternations of posture to remove by gravitation fluid from the lungs and to aid the blood and lymph circulation.

2. *Carbon dioxide administration.*—In certain conditions of poisoning, e. g., by coal gas, etc., in which respiration has ceased or has been reduced to the gasping stage, the administration of carbon dioxide is indicated to rouse the apneustic (inspiratory) centre to activity. In the light of our present knowledge this seems to be sound therapy. The addition of oxygen to the carbon dioxide remains a question but it seems best to alternate oxygen properly diluted with air or nitrogen, with carbon dioxide. All these procedures should be supplemented by the author's artificial expiration which also may be regarded as artificial circulation to conserve the expiratory centre.

3. *In acidosis* soçalled respiratory stimulants are contraindicated, i. e., they are to be used with great care if at all. Where the apneustic (inspiratory) centre is overworking under the stimulus of increased H ions in the blood it would be disastrous to whip it to greater activity by any stimulant and more especially by carbon dioxide. Indeed the indication in such conditions is to tone down the action of the inspiratory centre by the careful administration of alkali and thereby insure the continuance of its function pending causative treatment of the acidosis. As in all the acute and in many of the chronic infectious diseases the tendency is toward the reduction of the alkaline reserve and the establishment of acidosis the clinician must be on the watch for diminution of the alkaline reserve which will show itself early by the induction of prolonged expiratory phase.

4. *In increased intracranial pressure* as the result of mechanical, toxic or toxic infective trauma, neoplasms and other conditions, prolonged active expiration should put the clinician on his guard as to the necessity of operative interference. In all such conditions the immediate cause of death is mechanical, due to pressure upon the bulbar centres. Compare Byrne (4). After serious injury of the skull all the signs of increased intracranial pressure should be studied from hour to hour and especially the disturbances of the external respiratory mechanism. In my experimental work I found that with a graded increase of intracranial pressure the respiratory mechanism responded many hours before there was any material change in the pulse rate, blood pressure, or eye grounds. I also found that sudden encroachment of small extent upon the intracranial space was sufficient to induce respiratory disturbances, the first to appear being prolonged, forced expiratory phase.

However, not every slight disturbance of the respiratory mechanism is a positive indication for immediate operation (decompression) for after skull injuries certain mild pressure effects resulting from the edema of repair incidental to mild cerebral contusions (lacerations) and appearing on the second or third day tend to clear up on expectant treatment in a few days. Progressive impairment of respiratory function is, however, in all such cases a distinct indication for immediate surgical interference of the conservative type. The comparatively harmless decompressive operation in all such cases involves far less risk than waiting.

CONCLUSION

In conclusion, it is to be hoped that the clinician will quickly recognize the importance of analytical

study of the respiration as an aid not only to mechanistic diagnosis but also to rational therapy.

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Some Remarks on Insect Bites as a Cause of Heart Disease

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In this article I desire to draw attention to the following sixteen points:

1. The history of medicine suggests a spasmodic development of heart disease as a pathological entity.
2. Criticism oftentimes is carping and not instructive.
3. The introduction of the stethoscope was a big step in advance.
4. The dangers of dogmatism, as examplified in Watson's theory of the heart sounds.
5. The necessity of knowing the cause of the normal sounds.
6. The cooperation of the general practitioner an absolute necessity in a proper investigation into the cause of heart disease.
7. Historical reference—milk as an important food.
8. The value of milk as a lime bearing food.
9. The amount of milk consumed by children of the poor is practically *nil.*
10. The feeding habits of the poor are bad and made worse by drinking vinegar as well as alcohol.
11. The children of the poor constitute what I call the "acid" class.
12. All rheumatic fever and chorea cases occur among those of the "acid" class.
13. A deprivation of lime bearing food and a further depletion of lime by vinegar drinking result in an unstable mechanism.
14. This instability constitutes a predisposition toward carditis as a part of the attack of rheumatic fever or chorea.
15. Such an instability tends itself to a condition of anaphylaxis.
16. This anaphylactic condition is determined by the bites of insects.

Harvey described the circulation of the blood and the use of the heart in 1628, and ten years later Walaeus, professor of medicine at the University of Leyden, demonstrated what is now known as the sinoauricular node as well as the phenomenon at present described as fibrillation. Notwithstanding the large amount of experimental work done in connection with the circulatory system of animals, as well as man, during the twenty-five years following Harvey's great discovery, when transfusion was undertaken, and drugs of all sorts injected into the veins for the treatment of disease, heart disease was not considered as a pathological entity until about two hundred years later.

The introduction of the stethoscope in 1822 as a useful aid to diagnosis seems to have given a new impetus to the investigation of disease, with the result that we find Watson, in his lectures discussing volubly on the connection between acute rheumatism and heart disease.

Historically one might perhaps modify the statement regarding the recognition of heart disease as an entity, for we find that 1000 to 2000 years B. C. there was written in the Bible (Proverbs 14-20), "A sound heart is the life of the flesh," while the association of faintness with a cardiac disturbance was very general. Throughout the pages of Holy Writ there seems to have been a general agreement as to the most suitable treatment, namely, "wine that maketh glad the heart of man," and although no worse than most of the drugs used for heart trouble is, prohibition notwithstanding, certainly the most palatable.

Although such excellent work was done in the interval between Harvey's discovery and the foundation thirty years later of the Royal Society, unanimity was not general among scientists at that time, nor was criticism of the impartial and impersonal nature one ought to expect from learned men.

In the Medical Journal and Record for November 21, 1923, I quoted from the *Epistles of Walaeus,* wherein he stated that, "No man can publish in Print which some account excellent, but he presently meets with a Detractor who will cut and tear him most cruelly. Now, for a man to seek nothing else by his Cares and labours but Envie and Vexation of Mind, is extreme madness." This hypercritical atmosphere may help to explain why so little progress in medical science followed such great medical discoveries.

That the introduction of the stethoscope had a marked effect on the science of medicine is evidenced by what Watson tells us in his lectures about a case which he saw in 1824. "There had been symptoms," he states, "which indicated the cardiac disease, but at that time I did not know how frequently carditis was combined with acute rheumatism. Auscultation had not yet come into fashion in this country; at any rate I knew little or nothing of its use and I

had supposed that the chest symptoms resulted from rheumatism of the intercostal muscles." However, when Watson fully realized the advantage of using the stethoscope, he went thoroughly to work and laid the foundation of our modern cardiology, but it is interesting to observe how men of dogmatic personalities as well as being great discoverers themselves seem to hold up progress after their day for prolonged periods.

Watson appeared about two hundred years after Harvey, and then we get another period of about eighty years before Mackenzie sets the ball of progress rolling once again. The dogmatic element in Watson was the means of perpetuating the legend with regard to the causation of the heart sounds. He was the first to discuss the sounds of the heart, both normal and abnormal, and he did it with a minuteness which presupposed that all medical men were adepts at analyzing sounds, but a careful consideration of his statement shows a fallacy in what he says.

With regard to the cause of the first sound, he tells us that it "chiefly results from the muscular contraction of the ventricles," and adds, "You are aware that the vigorous contraction of a large muscle is accompanied by *audible* sound." The effect of that fallacious statement is as great today as it was in Watson's time, and is responsible for much misconception, with all the disastrous effects of a false doctrine. Did every large muscle produce "audible sounds"—as if sounds were ever inaudible!—we would, each of us, on the least exertion, be nothing else than a musical box.

For eighty years the medical profession has toyed with this extraordinary fallacy, and we are again faced with a period when the resuscitation by Mackenzie of Waleus's discovery of fibrillation is likely to lead to all the extravagant notions associated with the electrocardiograph, the great excuse for which is that civilization seems to move in jerks which have to be recorded somehow or other. The seriousness of the whole matter lies in the fact that if medical men are misled as to the cause of the normal sounds, their ideas with regard to the abnormal sounds of the heart must be equally misleading.

"Prove all things," the Apostle Paul tells us, "Hold fast to that which is good," and such advice is essentially useful when we are considering electrocardiograms. The mechanically recorded movements of the muscles of the heart, which we call "electrocardiograms," are often published with the *sounds* of the heart depicted on them as well. Such a depiction is calculated to mislead the majority of medical students who accept the opinions of their teachers on sound, as if they were absolutely valid opinions, and as definitely recordable as the movements themselves. This recording of the sounds tends to perpetuate the idea that they are caused by the muscle movements, but if the doctrine is not well founded and correct, it is both wrong and unscientific to persist in such a method.

The extraordinary elaborateness of the electrocardiographic methods lend themselves to wholesale deception both of the instrumentalists themselves and the rank and file of the profession, especially at present when they help to extract good fees from the pockets of the public. The experiments in the period succeeding Harvey's time were elaborate in the extreme, and in many cases even fantastic, but how many of them are ever dreamed of today?

What, therefore, shall we prophesy with regard to the marvelously elaborate therapeutic and diagnostic performances of the present day?

For such reasons let us try and get back to simple things; let us bring our common sense to bear on the common things of our everyday life, rather than allow ourselves to be led into mazes from which it takes at least a generation to extract ourselves. Could we but have the benefit of the wonderful experience of the general practitioner put before us in a suitable manner, what marvelous studies could be elaborated, but failing that, could we but get the general practitioner sufficiently interested in a definite investigation in order to bring his trained common sense to bear on the problem, what wonderful progress would be recorded?

The subject that I am dealing with is one that ought to appeal to all medical practitioners who have the wellbeing of the community at heart, because if anything can be done to stop the increasingly disastrous results of heart disease, it should be done at once.

The great and good work of the New York Heart Association is evidence of the seriousness of the problem from a national point of view, and although considerable progress has been made by way of relief, nothing definite seems to have been put forward whereby the disease can be prevented.

In order to prevent disease of the heart, we must first of all be certain as to its cause, but although we know it is practically part of what we call acute rheumatism, as well as chorea, and is often associated with adenoids and tonsillar trouble, nevertheless the actual *causa causans* still seems to evade us.

Any suggestion which can offer any hope of solving the present puzzle within the limits of common sense is, I venture to think, worthy of every consideration, and under such conditions I put forward my theory of the causation of heart disease. Causation has to be considered from the point of view of *predisposition* as well as *determination*, and taking predisposition first of all, it is important for us to decide whether we can isolate any special class of the community as being particularly prone to heart disease.

All mankind can be divided into two classes, first, those who drink milk, and second, those who do not or cannot do so. The value of milk as a food has been recognized throughout the ages and we are told in the Bible that Abraham could not place anything more acceptable than butter and milk before his angelic visitors. Solomon also states that as a result of diligence, "Thou shalt have goat's milk enough for thy food and for the food of thy household, and for the maintenance of thy maidens." Was not the Promised Land depicted as one ever flowing with milk and honey? Alas! how far are we in England from that land of promise when the average amount of milk sold amounts to less than a quarter of a pint a day for each person. One evidently has to go west to reach the promised land, if milk is any criterion, for in the United States the amount consumed daily works out at a pint a head. In Oriental lands one is struck by the universality of milk drinking

among the very poorest, and everywhere one sees a goat; one is also surprised at the absence of rheumatic fever and its sequel, heart disease.

Among the poor in England, and by that one means those who by virtue of their low wages are on the poverty line, the amount of milk consumed is quite a negligible quantity. Such wages do not allow of the members of these families having more than two ounces a head at most, but if the father spends any money on alcoholic drink the quantity of milk consumed in the family is reduced to nothing. Small as is the quantity for each person as worked out by statistics, in practice we find that of children in these poor homes, thousands receive no milk at all, while many or most of those who do get a little, get it in a very poor and dirty condition. How nations can hope that A1 men and women will be reared under such conditions passes all comprehension, while to allow a continuance of the conditions which breed persons of the C3 type is a fearful reflection on those in authority. "Ask and ye shall receive," is the advice given in the Scriptures, but if the people know not for what to ask, how can they possibly be expected to obtain the essentials for their wellbeing.

The demands of the populace at times of parliamentary and municipal elections are merely those they have been taught by their socalled leaders to repeat in a parrotlike fashion, and our hope for better things is to have leaders of high principle who will instill into them the idea of asking for the essentials of clean living and wholesome lives. At the present moment we are faced with the fearful fact that thousands of our fellow creatures do not get any of that most valuable of foods—the lime bearing milk.

To be deprived of this important food is bad enough, but when we find that many of the class who drink no milk aggravate matters still further by depleting their systems of the calcium salts by drinking acids, such as vinegar, sauces, lemons, oranges, the case is hopeless, because in this subclass of what I call "acid" children some serious disease, especially rheumatic fever and chorea, will develop in all or practically all.

The great value of milk lies in the fact that it is a great lime bearing food, the ash of milk containing as much as twenty-five per cent. of lime salts; in the ash of eggs the percentage is still higher, while in that of meat it is two per cent. or less. Lime can be said to be of the essence of life, because without it we could not exist or even develop into forms worthy of existence. When comparing a pharmacopœia of thirty-five years ago with one of today, no more striking change is noted than that under the heading of calcium, and it was while I was a student of Sidney Ringer at the University College Hospital, London, that I realized the great value of the lime salts. Ringer at that time was busy conducting experiments to show that lime salts were essential for the development of the ovum, as well as for the beating of the frog's heart. The experiments showing the necessity of keeping the frog's heart bathed with a solution of lime salts so that it might continue contracting are all the more interesting today when we know of the immense value of lime salts in connection with disease of the heart.

Digitalis and other drugs give more dramatic results no doubt, but taking all heart cases into account, one can do greater and better work by prescribing calcium intelligently. Heart work is certainly coming into its own, but unfortunately there are crowds of practitioners who still think that a murmur means either digitalis or a death certificate.

Not only is it necessary for the muscular fibres of the heart to be supplied properly with lime salts, but the circulatory blood must also have its proper percentage. The close association between the blood and the bones, especially with regard to the origin of the former, is of importance when we remember that the analysis of healthy bone shows that calcium salts form fifty-seven per cent. of the whole structure.

In rickets the lime percentage of bones amounts to only twenty-six per cent. and one can easily realize that the metabolic end products in a rickety child with a reduced lime content are quite different from those of a healthy child, while it requires no great amount of imagination to understand why the injection of say antitoxin gives rise to a considerable circulatory disturbance, such as urticaria. The accidental injection of a toxin of disease must also result in quite a different reaction when it takes place in a lime depleted rickety child, from that which takes place in one with normal calicum metabolism.

Chronic ulcers of the leg occur among the poor in whose diet the lime containing fluids are conspicuous by their absence. In the *British Medical Journal,* July 11, 1901, I demonstrated the value of calcium iodide in such cases. Such ulcers occur among the poor in India, making these persons conspicuously offensive in the bazaars by their foul smells. It is interesting to note, however, that those natives who can afford it chew Pan or the leaves of the *Piper betle* wrapped around a small amount of lime. Here is evidence of a natural, instinctive effort to make up for the deficiency of lime salts in the food.

In *The Hospital,* February 4, 1911, I drew attention to the deficiency of lime salts in the dietary of soldiers on active service; the drain of lime salts from a body badly supplied with such, is increased by efforts of an exhaustive nature, and when to this draining is added the depletion that follows the drinking of alcohol, it is no wonder disease becomes rife. Even acid drinks, and especially vinegar, must be looked upon with grave suspicion when drunk by an exhausted soldiery on the field, supplying to me the evidence whereby a predisposition to disease and especially heart disease is created.

The well known result of traumatism in an alcoholic subject, namely delirium tremens, emphasizes the fact that the poisoning of the system or its metabolic disturbance is the great predisposing cause of the tremor. It is difficult to say what is the exact chemical result of such a poisoning, but of this we may be certain that the calcium metabolism has been greatly upset, as is evidenced by the fragility of the bones, as well as by the tendency to erythematous and other inflammatory conditions. The association of a lime depleted system with a tendency to erythema is certainly of interest in connection with the problem of heart disease, for is not the gradation from urticaria via tonsillitis and erythema nodosum to rheumatism one which has been universally recognized?

All children with heart disease are those who do not drink milk, and who deplete their systems sti

further by taking acids, such as vinegar and lemon. These children are very prone to urticaria and local inflammatory disturbances, which are clearly associated with a disturbed calcium metabolism. They are also very readily attacked by fleas, midges, and similar insects. These children alone provide the so-called cases of status lymphaticus, whose hearts fail so readily under anesthetics, because in my opinion a condition of precardial urticaria is produced whereby the intrapericardial condition and its contents are seriously disturbed. What I consider to be the most important element in the condition which predisposes the child to heart disease is, then, a system depleted of lime salts whereby a tendency to local inflammatory conditions is set up; and all these cases occur among those children which I call acid, because of their great partiality for acid and sour things, which cannot by any stretch of the imagination be designated as foods.

How are these children to be recognized? What are the clinical signs which characterize this acid class? They have, 1, inflamed, puffy, or bleeding gums; 2, red raw, or cracked tongues; 3, nailbiting habits, and general irritability; 4, marked epigastric reflexes; 5, pallor, but readily produced dermographs; 6, erratic appetite; 7, a tendency to be easily puffed after exercise; 8, diminished energy and interest in affairs; 9, enlarged tonsils and adenoids.

During childhood the calcium metabolism is one of very great importance, for it is in this period that teeth are erupted, and bones are growing and becoming consolidated. For the growth of bones, lime is an absolute necessity, and with a minimum supply of lime to the system, it is evident that oftentimes a point of much precariousness is reached. In all these cases it is interesting to remark that the calcium content of the blood is apparently not much disturbed, and the explanation seems to be due to the fact that the blood is kept up to sample at the expense of the bones, which become denuded of lime salts and therefore very fragile.

Of course a point is reached when the lime content of the blood is disturbed, and a period of irritability sets in, because the lime salts are very necessary for the movements and general activities of the white corpuscles—so necessary for phagocytosis—as well as for the production of the necessary complements. Experimentally Ringer demonstrated the necessity of a calcium salt solution for the movements of the muscular fibres of the frog's heart, and for the life and movement of cells generally, so that a diminution of the blood calcium must modify the movements of the heart's action as well as the endothelial activity.

Calcium salts have a marked action on the surface tension, as shown when a globule of mercury is washed with a lime solution and allowed to roll on a flat surface. It no longer possesses the characteristics usually associated with quicksilver, but remains an inert mass, ready to assume any shape.

What effect, one asks, has the variation in the blood calcium on the surface tension of the blood cells? Does this affect the diapedesis of the white corpuscles, or the pseudopodic movements of the endothelial cells? If so, is predisposition closely associated with a disturbed diapedesis? Accepting this as a fairly true and accurate statement with regard to the conditions associated with a predisposition towards carditis, it remains for us to try and point out further what is the factor which determines the oncoming of the disease in those so predisposed. Is any toxin introduced into the system? And if so, how and in what form? Is there any protein sensitization associated with some form of anaphylaxis?

Let us consider some of the signs and symptoms associated with anaphylaxis, and we find urticaria, malaise, vomiting, vascular hypotension, a feverish condition, and joint pains or even swellings. Such symptoms are similar to those one finds in acute rheumatism, and the similarity is suggestive. Anaphylaxis is especially prone to occur in those I have designated acid children, possessing a low calcium content.

Dale has pointed out that one of the chief features of anaphylaxis is a poisoning of the endothelial cells, and the determining factor is one which affects the endothelium in different parts, e. g., cold determines a disturbance of the endothelium in the extremities in chilblains. Dale is of the opinion that sensitization is cellular and not humoral in location. The antigen and antibody do not meet in the blood stream, but as the antibody is in a cell, the reaction with the antigen takes place at that spot, whither the complement is conveyed by the leucocytes.

In this connection some experiments of Walker and Holmes are very interesting, in showing a selective response on the part of the leucocytes to the injection of various substances, e. g., glandular substance stimulated the mononuclear corpuscles, and diphtheria the polymorphonuclear ones.

The majority of cases of acute rheumatism occur in the late autumn just after a period when most people have been worried and bitten by insects, such as midges, harvest bugs, and sand fleas, and some of us react far more intensely than do the more fortunate members of the community. In most cases the effects of such bites pass off fairly quickly, but much depends on the dose, which, if big, may produce even in a strong healthy individual some very disturbing general effects.

The effects of insect bites vary from a mere temporary irritation to all the inconveniences which constitute the symptoms of sandfly fever, with its headache, fever, and pains in loins and limbs; temperature raised, the pharynx and tonsils inflamed, while vomiting, epistaxis and gastric disturbances may occur. The cuticular effects are minute red spots, large papular infiltrations, or erythematous blotches, the whole being suggestive of an attack of rheumatism with all the predisposition due to a deficiency of the calcium content. With a definite predisposition, one can understand how the protein may have a specially selective effect on, say, the endothelium of the cardiac bloodvessels, with consequently severe metabolic disturbance of both myocardium and endocardium.

As I said above, injecting a toxin into a rickety child with a very depleted calcium content produces metabolic results and products quite different from those in a healthy child, and the metabolism of the rickety child is so constituted that it is very readily disturbed. All reactions of the body are what I call time reactions, and disease caused by proteins or toxins is, as in catalysis, merely a modification or

increase of the reaction and never the setting up of a new kind of reaction. The introduction of a catalytic agent in the form of a protein toxin by means of an insect bite is sufficient to account for all the change of the time reaction rate in the body of the person bitten, and if the histories of all carditis cases tend to corroborate such a statement, we have every reason to be satisfied with the theory advanced.

What I am particularly anxious for is that medical practitioners throughout the country should test the accuracy of the theory, first of all as to the tendency of acid children and they alone, to manifest metabolic disturbances which we call acute rheumatism, and secondly, as to whether all those children previous to such a development have been the victims of insect bites, e. g., fleas, midges, harvest bugs and sand fleas.

With regard to fleas, as far as I can find out, there is a seasonal or periodical variation in their viciousness, and they bite more readily and with more deadly effect at some times of the year than others. Much has been written on the family tendency toward acute rheumatism and, merely looked at from the similar or equal exposure to insect bites that occur to members of the same family, one feels that there is some truth in the suggestion, but when we remember the familial habits of feeding, i. e., those handed down from mother to daughter, together with an insufficient income, it is easy to realize that such feeding habits are very far from what they ought to be. The children of the poor never get any fresh milk, or only just enough from a dirty supply to discolor their tea, whereas eggs never can at their present price form part of the dietary.

Lime bearing foods therefore cannot form a proper proportion of their food dietary, while their poverty condemns them to conditions which necessitate living in poor houses under dirty conditions, where vermin thrive unrestrictedly, and by their bites produce an anaphylactic condition which results in acute rheumatism together with carditis.

61 Walter Road.

The Large Intestine and Vagus Sympathetic Action by Atropine and Eserine

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In our studies of the mechanism of disease, we have correlated the relation of the vagus sympathetic balance of the vegetative (sympathetic or autonomic) nervous system with the hydrogen ion concentration of the blood (p.H.) and their relation to disease processes. We found that the smooth (or nonstriated) muscle of the gastrointestinal tract could be taken as an indicator of the vagus sympathetic balance and that this balance and the smooth muscle reaction could be correlated to the acid base balance of the blood as shown by the p.H. of the blood. We showed this relation in a schema (Fig. 1) which shows better than any description the result of our researches. We produced x ray pictures which showed that the amplitude and postural tone of the large intestine could be correlated with the hydrogen ion concentration of the blood (p.H.), and we demonstrated these results of our observations and experiments.

In this study, inasmuch as it depended to a considerable extent upon the action of the smooth muscle of the intestine as an expression of nerve action, and of the balance of the vagus and sympathetic parts of the vegetative nervous system, it was of importance to meet two possible criticisms: 1, that the postural tone of the intestine (particularly the large intestine) and the arrangement of its haustra really depended upon nerve action and not upon muscular reaction; 2, that the pictures and arrangement of the intestinal musculature was not the result of mechanical accumulations of the intestinal contents, the socalled filling effects, of the radiologists.

For this reason we experimented with atropine sulphate and eserine sulphate. As is well known, atropine paralyzes the vagus and eserine paralyzes the sympathetic branch of the vegetative nervous system. The vagus inhibits the heart and stimulates the gastrointestinal and the pupillary smooth muscle, while the sympathetic stimulates the heart and inhibits the smooth muscle of the pupil and of the gastrointestinal tract. It is obvious, therefore, if we got effects through the hypodermic injections of atropine and eserine, these effects must of necessity be nerve effects and, if the postural tone and arrangement of the large

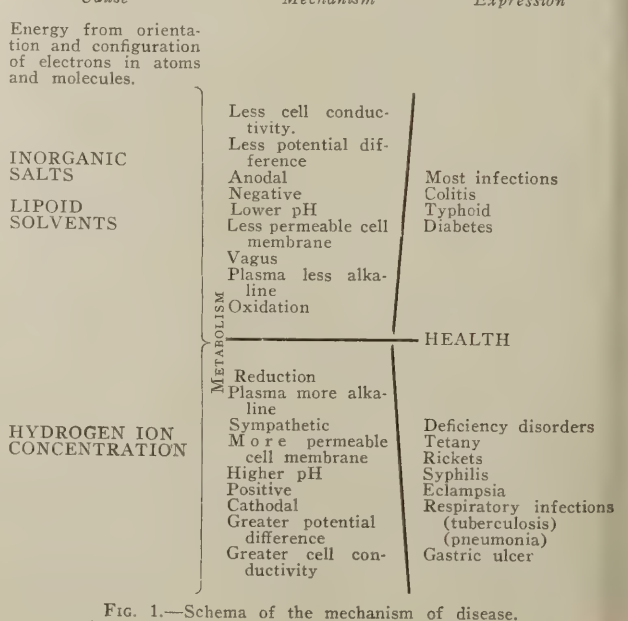

Fig. 1.—Schema of the mechanism of disease.

intestine was altered without alteration in the amount or progress of the intestinal contents, the change in the arrangement of the haustra must essentially be due to nerve action and to the vagus sympathetic balance of the vegetative nervous system. The socalled filling effect is an expression used to indicate a phenomenon inexplicable to the radiologist, but these socalled filling effects are apparently nerve effects. Something makes the intestine take the shapes arrangement and special postural tone that it does (in distinction to the geographic or spatial arrangement) and it must essentially be nerve action as in the action of smooth muscle elsewhere in the body.

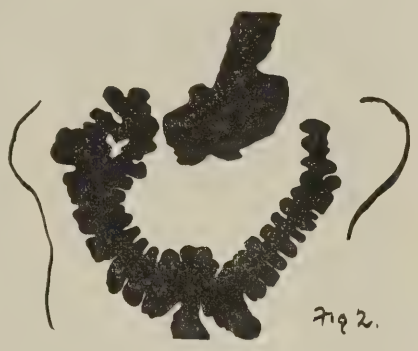

Fig. 2.—First condition of colon and stomach of first patient before atropine.

Fig. 3.—Second condition of colon and stomach of first patient after hypodermic injection of atropine sulphate, gr. 1/75, showing enlargement and obliteration of the haustra.

In our studies of the smooth muscle of the gastrointestinal tract and its relation to the vagus sympathetic balance, the patients were observed under uniform conditions with a uniform barium sulphate meal, and at a uniform time and in the absence of drugs or purgatives. The patient in the atropine experiment was a nurse, with a reasonably normal vagus sympathetic balance, and the patient in the eserine experiment was one whose balance had been almost constantly upon the sympathetic side as was shown by her p.H. which was always upon the alkaline side of p.H. 7.4 and her previous x ray pictures of which we had made a considerable number in a study of her extending over two years. These illustrations are chosen from a number of similar experiments with these drugs. The illustrations were made from direct tracings of the x ray films over the viewing box and the x ray films were taken from the front of the patient. The hydrogen ion concentration estimations were made after the Hawkins's method as modified by Hastings and Sendroy, Jr. (2 and 3).

In the atropine experiment, an x ray record (Fig. 2) was taken of the patient who was then given atropine sulphate, one seventy-fifth gr., hypodermically, and another x ray (Fig. 3) picture was taken forty-five minutes later. The haustra of the colon was then flattened and obliterated and the amplitude of the colon was greater. The stomach had become relaxed. In other words, the vagus action of contraction or constriction had become diminished and the sympathetic action of dilatation had become increased. The action of atropine upon the pupil is well known, and a similar action upon the nervous mechanism controlling the smooth muscle of the intestine is here shown. This effect is translated by us as a sympathetic effect and it is in consonance with the action of atropine in decreasing gastric acidity.

In the eserine experiment, the patient had a dilated intestine (Fig. 4), a sympathetic preponderant state with a p.H. upon the alkaline side from blood p.H. 7.45 to p.H. 7.6. She was put upon eserine sulphate, one sixty-fourth gr., twice daily for six days and an x ray picture of her colon then taken (Fig. 5). Her colon was then seen to be markedly contracted and her blood p.H. 7.35. Here then was a marked change from the sympathetic effect (Fig. 4), with a dilated colon and obliteration and blockiness of the haustra, to a contracted colon with marked vagus preponderance. We have not as yet made enough observations to say that the hydrogen ion concentration of the blood p.H. is constantly changed under vagus stimulation of eserine, but the appearance of the large intestine (Fig. 5) is one we associate with a blood p.H. of this degree. A single hypodermic of atropine will not, in our experience, perceptibly alter the p.H. of the blood.

Fig. 4

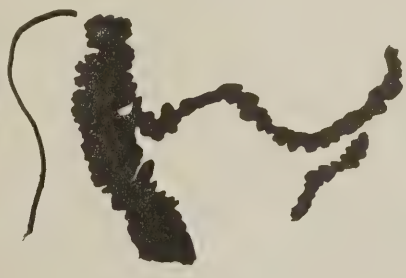

Fig. 5

Fig. 4.—First condition of colon of second patient who was always upon the sympathetic side.

Fig. 5.—Second condition of colon of second patient after eserine showing contraction of the large intestine and a vagus condition with a p.H 7.3.

The conclusion from these experiments is that the amplitude and postural tone of the large intestine may be changed through the vagus sympathetic nerve action by chemical substances, such as atropine and eserine, and that postural tone of the gastrointestinal tract is dependent upon the vagus sympathetic balance of the vegetative nervous system.

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The Toothbrush

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In the hygienic aim of causing the preservation of the teeth by cleaning them with the toothbrush the fact that a toothbrush could frequently become contaminated, therefore a source for perpetuation of an infection which the person may have, and also that it might cause a reinfection, has been overlooked.

It is almost sacrilegious to dethrone the toothbrush from the pedestal upon which it has been placed, but because it has been idealized is no reason why its powers for bad as well as for good should not be studied.

Only very rarely have articles appeared in medical or dental literature condemning the toothbrush. A few of these writings are as follows: Observations on the Bacteriology of Toothbrushes, by H. Smale and D. W. Carmalt-Jones (1); The Sepsis of the Toothbrush, by W. P. Harrison (2), who said, "Not only the public but even dentists themselves have little conception of the filthy state of the apparently clean toothbrush as used in every day life"; an editorial in the New York Medical Journal (3), November, 1919, says, "The implement (toothbrush) was never used so much as it is at the present time, and yet the teeth of mankind were never so bad"; The Toothbrush as a Cause of Repeated Infections of the Mouth, by C. M. Cobb (4), who, after discussing the brush and reinfections, says, "The happy solution of the problem would be for someone to invent a brush which would hold a piece of cotton or felt which could be thrown away after it was once used"; J. L. Kelly (5) says, "The toothbrush is a relic of the dark ages"; C. H. Witthaus (6) quotes Dentz, dean of the dental department of the University of Utrecht, as declaring twenty-five years ago that "pyorrhea alveolaris is generally only the consequence of tooth brushing," and Witthaus in his article says he is converted to the opinion that "the toothbrush is the causal factor in alveolar pyorrhea."

I recently discussed this subject in the New Haven, Conn., *Department of Health Bulletin* (7), and said, "With the evolution of more and more sanitary precautions for the prevention of infection and reinfection the menace of an infected toothbrush now presents itself for consideration. In mouth and throat infections, including diphtheria, tonsillitis, scarlet fever, measles, etc., the toothbrush used just before the patient became ill must be destroyed. It is a menace, and may cause the patient to become a carrier of the disease with which he was affected.

"With tender, bleeding gums the toothbrush is an implement of injury, and the bristles may prick the gums and cause the very infected areas that it is supposed to prevent. The toothbrush is not the proper implement for massage of the gums."

An editorial in this *Bulletin* (7) says, "Is it not about time for those of an inventive turn of mind to put their attention to the development of an instrument that can be used for the care of the teeth that will always be clean and have no element of possible harm to the tender mucous membrane!"

Dr. William Rice, dean of Tufts College Dental School, writing in the very recent book of Dr. C. E. Turner entitled *Personal and Community Health* (8), says that "as a result of experiments" he "has found that a brush rinsed in water after using and then placed in a closed receptacle developed many more bacteria than one which was rinsed in hot water and left in the air to dry."

The dental hygiene instruction now given in many of the public schools of the country consists in part of the methods advocated by Dr. Fones, of Bridgeport, Conn. The term generally applied to the practical part of this teaching is "The toothbrush drill." Generally the drill consists of the children being requested to bring their toothbrushes to school, where class instruction is given by a teacher or dental nurse. Each child puts his toothbrush into his mouth and goes through the various motions of brushing his teeth as demonstrated by the instructor. In the larger schools, at least, the brushes are not washed but are put into envelopes to be taken home and there washed.

It is hardly necessary to prove that from ten to twenty per cent. of all children taking part in this drill have colds, sore throats, infected tonsils, decayed teeth, or sore mouths. Therefore a certain percentage of these brushes must become infected. Food particles removed from the teeth and adhering to the bristles must offer pabulum for the growth of some bacteria, and it is a fact that any used toothbrush can be proved in the laboratory to harbor bacteria, most of which are harmless, but quite frequently pathological germs are found.

Aside from the personal menace of using an infected brush, even if one were immune to his own germs, there is the constant possibility in families of several children (where the toothbrushes often repose in some receptacle in close contact with each other) of others acquiring an infection from these contacts. From an esthetic point of view the toothbrush reposing in a bathroom, where most brushes spend their leisure, is not appealing.

It would seem that after treating a patient who has pyorrhea or Vincent's infection a dentist must caution against the use of the infected toothbrush which is waiting at home to undo the benefit from the "prophylactic treatment." Also a toothbrush used by a person in the incipient stage of an infection should be destroyed or be positively sterilized before it is used during convalescence and after recovery.

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City Enforcement of Drug Laws*

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Federal statistics show that annually in this country some 460,000 men over twenty years of age die from chronic disease. When it is appreciated that for each death reported there are approximately ten cases of such sickness, we find a lush field for the sale of the socalled patent medicines. In plain mathematics, we have annually over four and a half millions of cases of sickness, in all of which the patients are seeking restoration to health in one way or another.

We cannot condemn all of these preparations, but no less an authority than the National Society for the Control of Cancer has declared on this subject as follows: "All proprietary 'cures' are not only worthless in themselves but fatal in that they keep the patient from submitting to surgery until it is too late."

If this broad statement can be true in regard to this malady, may it not with equal positiveness be applied to other conditions?

An obligation rests upon physicians, public officials, and all who deal with happenings to the ill, to stick to the essentials of truth, and if they do so imposition, fraud, and rascality will be relegated to its proper position—which is before the bar of justice. A general conception of the golden rule in this matter, consideration of the ill, makes you your brother's keeper. There is no other way to combat a common enemy. It is this fact which makes this matter of especial concern to all groups of citizens.

THE WIDESPREAD USE OF THE PROPRIETARY REMEDY

In 1888 a gentleman representing a large drug house, doing an enormous business in proprietaries, stated that his firm handled less than a thousand of these remedies. In 1924 this same firm had no less than sixty thousand different accounts of this character.

Many informed persons (professional and public officials) are seriously concerned about these proprietary remedies—but charitably let us suspend judgment until we can gather information of a positive character about this business. How much is due to fraudulent advertising? How much is due to misinformation? How much is incident to stygian ignorance? For it is by knowing facts that we shall be able to wage a successful war against exploitation. In our consideration of the regulation of the distribution of drugs, we have one idea in mind, not to interfere with any honest business prerogative but to make the handling of these agents as safe for the public as it is possible. In other words through supervision we desire to prevent injury or precocious death.

A SPECIAL GROUP FOR CONSIDERATION HERE

Hypnotics.—In the common everyday misuse or abuse of drugs for selfmedication we have found no class of drugs more often abused than those used to produce sleep.

They are all exceedingly dangerous, and the danger is not generally appreciated. Persons who burn the candle at both ends, who work by day and play by night, or who rob the night of its sleep for one reason or another, formerly caught up on sleep through the rather free use of chloral but the use of "knock out" drops by the criminally inclined put this agent in the proscribed class. If there is a market there is a supply, and it did not take the chemists long to synthesize a substitute.

The barbituric acid derivatives today are crowding the market and they are a group which require very careful consideration. Here we find veronal, sulphonal, trional, medinal, and luminal. Of these perhaps the one most sinned against is veronal and this one we have proceeded against by a special act. Formerly when in need of a sedative or sleep producer, it was a simple thing to take a small dose of chloral and go comfortably to sleep. It has often happened, however, that a person, apparently in the best of health, has retired to bed and during sleep has "passed on." We ask ourselves, how many of these sudden deaths are natural? It is somewhat disconcerting to find that in many of these cases the connection between death and a selfadministered sleeping potion was quite frequent.

It is amazing to learn from some of our busy pharmacies—especially those catering to social night owls—how many boys and girls, young men and women on the threshold of a career, resort to hypnotics to obtain sleep.

Investigation also shows that the distribution of these drugs was by a rather limited number of shops in certain localities. It is also disturbing to read the advertisements of some of our department stores, which have drug and cosmetic departments, and learn that these are catering to this trade. Industrial inquiry shows that many young business workers, especially females, are taking up this practice with great frequency.

We have sufficient evidence against these drugs to warrant sanitary code regulations and since we have interdicted this promiscuous distribution it has had a wholesome effect upon their being used for selfmedication in our locality.

COSMETICS

These preparations do not come under the proscription of the pure food and drug act, and so these proprietary preparations enjoy privileges which are many times actually unsafe. Sufficient emphasis has not been placed on the components of cosmetics and the dermatoses which many of them provoke. Many socalled eczemas of women and young girls, if carefully investigated, will be found to be cases of dermatitis venenata, or artificially created inflammation of the skin. The anilin dye used in bizarre facial decalcomania is known to be a positive and dangerous

*Paper read before Association of Food and Drug Officials of the United States at Denver, Colorado, July 30, 1925.

chemical. Paraphenylendiamin, a chemical poison, is a frequent constituent of various hair dyes. Carbolic acid is often used to remove wrinkles. Ammoniated mercury and bichloride of mercury are often used in cosmetic preparations and no more virulent poisons exist, yet their sale is unregulated. Legislation is needed to prohibit the use of anilin dye in cosmetic preparations, of paraphenylendiamin in hair dyes, and mercury in freckle and wrinkle removers. Lead is a known poison, yet it is often added to give body and holding properties to face powder. Bismuth is found in many socalled liquid powders. Here we also find anilin used when it is desired to make a bizarre tint. Pumpkin colored powder has been known to cause inflammation of the cheek quite often, in fact, in some quarters this is so apparent that we find women of the stage cautioning their sisters of the dance hall about its dangers. The lip stick has already claimed in death some of its votaries. We find these highly colored affairs are tinted with anilin. In general it may be safe to assert that all dyes of a chemical nature do some damage to the hair and skin. This is especially a menace when anilin is used in any manner.

It may seem out of place to discuss here the esthetic side of this problem but we are reliably informed that in this country there are annually used some 240,000,000 packages of rouge, which in the main is harmless but the element of danger in the balance of these preparations, especially those using anilin, is considerable. In our experience with hair dyes, and we have tested some eighteen different preparations in our laboratory, we found paraphenylendiamin in every one of them, and some nine of these firms have been brought to court, but owing to the difficulty of legally connecting cause and effect we have not been as successful in these cases as we would have liked.

Here then, we would like to recommend that cosmetics containing chemicals of any character be included in the amendment to our pure food and drug law. We have included many of these in our code—mercury, alcohol, etc.—but we have not been able to go the length thought necessary to make such goods safe and free from hazard. The fact is undeniable that there are many dangerous drugs contained in a great many of the modern beauty preparations, which are being frequently sold as quite harmless and safe preparations.

START OF STUDY OF THIS PROBLEM

My interest in drug regulation is not new. For over thirty years I have devoted a good part of my time to the work and study of this problem. My attention was attracted to this condition very early in my medical career, through having met with a serious and most regrettable accident. A lady, the mother of five little children, was advised by a neighbor to take a certain preparation for headaches, from which the little mother was a chronic sufferer, and on this bad advice, honestly but ignorantly given, this woman lost her life. Rabid and excessive talking, supported by worse than loose newspaper advertising of drugs, has so misinformed the public about therapeutics that many thousands of human lives have been needlessly sacrificed in addition to a useless and needless waste of considerable money.

PROGRESS IN REGULATION

In spite of adverse and foolishly inimical attitude of both the press and business toward progress in the regulation of drug distribution we think that considerable advancement has been made, which while slow, has been steady and certain. The recent move by the advertisers themselves in this matter—the better business advertising group—has been a step in advance, and we expect to see much needed legislation favorably considered and more general public cooperation than heretofore given in this direction.

In the matter of securing legislation, at least in New York, merchants associations and business groups have not been cordially cooperative in these matters. In fact, in nearly every single move we have been opposed by astute legal counsel, publicity propaganda most hostile, and an influential lobby. However, through ability to make our own code, we have been able to devise regulations with the force and effect of public statute, and through these prosecutions have been able to impress favorably, not only the press but a number of influential persons. A death, a damage, or a fraud case, when successfully prosecuted, teaches many admirable lessons. On the other hand, cases lost in court seriously handicap our efforts.

Our legal counsel is most insistent about getting positive evidence that can be proved in court before he will advise the serving of even a summons. In fact, our lawyer informs us that our cases must be almost legally perfect, as we are the initiators of the action. The losing of these cases makes a hostile court, prejudices the jury, and furnishes opportunity for adverse criticism by the press.

Although we have not as yet accomplished all that we hope to do in the matter of drug regulation, we are abundantly satisfied with our past efforts and are encouraged actively and aggressively to extend our activities in these respects. The reaction of business now that the utter sordidness and disregard for human health has been legally proved and the offenders not only exposed but penalized we are reaping the fruits of our hard labor in behalf of the public, but the battle is not won, for there is still considerable to be done.

Today drugs are better prepared, and the methods of standardization have been improved. The people are being taken into confidence and many are becoming interested. The recent discoveries in diabetes treatment by our neighbors to the north of us gave our press and our people considerable light on the methods of modern therapeutics and this public health education will do much to kill the exploiting market. However, there are still a few who are selling dandelion flour as a cure for "sugar secretion." If knowledge is spread intelligently in these matters, not only by scientists but by public officials, we will find consistent with this relationship, distribution will be at least on a par with this progress.

It has been of interest and value to me to attempt to outline many paths along which regulation in our territory should proceed in the future, and here, in passing, let me urge that the regulation of the distribution of drugs should not go any further than the public is willing to accept.

There are many important paths for progress in

this regulation, but which if taken without educating the people for its necessity, would be quickly followed by failure because these efforts would not receive cordial cooperation without preliminary education. If there was a prohibiting statute enacted it would cause a hostile reaction by both press and business.

The constant discovery of new drugs, and new uses for many of our old drugs, makes the problem of public regulation one of considerable importance to a great many people. No two persons react in exactly the same way, in fact in a careful study of those drugs used frequently by laymen for selfadministration—sedatives for instance—we find naturally many abuses. Considerable of this habituation has been checked through our admirable federal statute (the Harrison Law) but this is a limited statute while we have in mind the extension of this prohibition to every drug known as a poison—and accepting this term in its broadest scientific interpretation in this respect. In fact regulation should be extended to all drugs that might in a way be unsafe for the uninformed to handle except in a regulated manner.

We must, in the interest of life and comfort, establish in the future more exact and accurate directions for the use of dangerous drugs.

People in all walks of life and in all kinds of occupations, gather together, for the purpose of discussing problems common to the members of these groups; here they gain knowledge and experience from the experience of others. I cordially endorse and advise conferences.

When a doctor, or an official of our public health service, gives to the public facts regarding the dangers of drugs, the manufacturer, exploiter, or jobber of a "remedy" has on tap a "stock" retort.

Let one advise the public to get vaccinated, to become immunized, to avoid certain places, to do certain things, either to stop an epidemic, to prevent certain diseases, or to prevent accident, just that moment there is a contrary spirit aroused in many to want to do just the opposite.

Emotions play an enormous part in this undertaking, because they form the expressive link between thought and conduct.

The patent medicine man's excuse, when his business is attacked, or hit by regulation, is the age old one of competition. He comes before us and complains about his competitor.

Every lurid misleading advertisement of the scaring kind that frightens the healthy into the belief that they are ill, sends at least four such persons to a doctor to every one that it sends to the advertised remedy.

A concrete case here was pleasingly demonstrated in the sale of a new tooth wash. This firm started out on the pyorrhea problem. They had a good preparation and they had money so to get the public to buy those goods they started to advertise. These advertisements bordered more on the untrue than on the true. They were wholly misleading, dishonest, and their statistics startling. People read these advertisements.

We had them come before us and we directed them to revise their copy or stand a law suit. They revised. I then asked one of the dental societies what was the effect of this advertising on the dentist's business. Of some ten dentists, doing a large practice among high society folks, three of them reported that their practice was considerably increased by patients, heretofore unconcerned about their teeth, anxiously inquiring about the condition of their mouths. One of these gentlemen said he was sorry to see the advertisement modified because it was making good business for him.

No small proportion of the clientele of physicians are those who neglectful of disease in its early stages many times firmly believing the assertions made in advertisements for fraudulent medicines have placed unwarranted confidence in these products until the malady has advanced to a stage where not only medical advice is imperative but where prolonged treatment is essential and often in many of these cases it is too late for more than palliative treatment to be given.

Fraudulent medicine business is a doctor's greatest boon and so far from curtailing the income of the average physician as has been said these secret remedies augment it.

A patent medicine, in the strict legal sense of the term, is a medicine whose composition, or method of making, or both, has been patented. Evidently, therefore, a patent medicine cannot be a secret preparation, since its composition must appear in the patent specifications. Nearly every nostrum, instead of being patented, is given a fanciful name, and that name is registered at Washington, thus becoming for all time the property of the exploiter.

I have time and again described a nostrum as being nothing disguised as some thing. The word remedy, however, in this relationship acquires a sinister sound at which both doctor and druggist shudder on hearing it from the lips of a selfprescriber.

PURPOSES OF PATENT MEDICINE REGISTRATION

Education of the people regarding the dangers of selfmedication. Prevention of the sale of unsuitable remedies. Prevention of substitution. Preventing the sale of habit forming agents under disguise. Preventing of the making of hypochondriacs. Checking misleading and fraudulent claims for a secret operation. Preventing deceptive sale of poisons. Aiding in enforcing such statutes as the Harrison and Volstead laws.

Every locality, in this connection, has its own problems, and in this respect but few are similar. In a large town with many foreigners and transients, we perhaps have problems not met with anywhere else, in fact such is our hope at any rate.

The New York City Board of Health has studied this problem a number of years before any action was taken and when action did begin, it was opposed from the onset by business. Every move was contested in the courts and in nearly every instance the fight was so bitter that no matter which side won, the lower court's opinion was never satisfactory and so up step by step, from magistrate, to Session, to Supreme, then to the Court of Appeals.

The regulation regarding these agents required no less than four years to get a law that would stand the test, and at the same time have sufficient teeth to make such enforcement reasonably satisfactory and not a farce.

The following are the captions of our regulations:

Manufacture and sale regulated,
Definition of adulteration, misbranding,
Prohibiting fraudulent representation,
Sample distribution regulated,
Poison—distribution and sale regulated,
carbolic acid, wood alcohol, mercury,
habit forming drugs, hair dyes,
Toilet preparations sale and distribution regulated,
Condemnation and destruction authorized,
Medicated alcohol sale and distribution regulated.

Perhaps the brief mentioning of these captions is sufficiently explanatory here but I would like to add a few words about habit forming drugs—prohibited acts constituting a menace. We are, no doubt, alone in our interpretation of this evil but as necessity knows no law so when we face a menace we have the power to meet the situation and in this connection our counsel took a route perhaps technically unconstitutional but expedient. It so far has not been contested and having been in operation now for several years and giving satisfaction in these cases we are rather proud of the pioneer experience.

The following is the statute: "Pestilential disease shall be deemed to include the conditions and symptoms resulting from the habitual use of habit forming drugs, and known as drug addiction."

CONCLUSIONS AND RECOMMENDATIONS

The first move in protecting the public from this evil will be to demand that all concerns selling remedies for self treatment, or used by any healing establishment not on a doctor's order, be required to declare on the label the names and quantities of those ingredients for which therapeutic claims are made. This attest would destroy secrecy, it would hit the crooked patent medicine faker the hardest blow that could be dealt. This is a reason why these persons fight every bill or ordinance or any suggestion looking toward such nonsecrecy.

Second: Any patent medicine containing an appreciable quantity of a scheduled list of dangerous drugs to bear the poison label.

This is done in England but the fault with the British Pharmacopœia is that their list of dangerous drugs is not comprehensive.

Imagine, in this connection, that before legal regulation of these agents, many patent medicine soothing syrups, for use in infants, contained heroic doses of morphine, disguised. No wonder these goods earned for themselves the soubret "baby killers," because they earned the title when they destroyed these tiny lives through such abuse.

Third: Prohibit, for selfmedication, all remedies promiscuously sold, containing drugs declared so dangerous as ordinarily to require a physician's prescription and all drugs for which physicians cannot prescribe without filling out certain blanks that are kept as Federal records. This would at once disbar any patent medicine coming within the Harrison or Volstead acts.

Fourth: Amend the present Federal Pure Food and Drug Act governing the sale of these remedies to cover claims made for such medicines *wherever such might be made*. Not simply "in or about" the package. This would do away with the present anomalous state of affairs, which, while prohibiting the patent medicine maker from making false or fraudulent claims on or in the trade package, which does not come into the hands of the public until after purchase has been made, and which permits him to make false and fraudulent claims in avenues of publicity—newspapers, billboards, circulars, hand bills, through which sales are ordinarily effected.

All cosmetics to be brought within the scope of the pure food and drug act. It is an absurd state of affairs that the national law should limit the definition of drugs only to those preparations that are used for the cure, mitigation, or prevention of disease.

Finally: All drugs or chemicals used for domestic purposes, and which are known as poisons, dangerous drugs, to be plainly marked, to have the usual poison marking, and to have antidote and suggested first aid clearly printed on the package.

I have here a label taken from a can of caustic, used for dissolving vegetable fibre in plumbing, sold promiscuously to any one. The carelessness of this form of distribution is most reprehensible. Sight may be destroyed, skin disfigured, and life itself threatened but not a semblance of the danger is noted on this label.

The only possible argument a manufacturer can offer under these circumstances is that properly to identify these drugs might hurt their sale. Every one must admit that from a public health point of view it is the only rational thing to demand. Safety should be considered before profits.

If these simple and easy recommendations meet with your approval, and you endorse the suggestions, it will be but a short time before your influence will be felt in the halls of our legislatures and these protections then will be given to the people. These regulations would go a long way in curbing the evils of the patent medicine industry.

In closing, might we not ask, if proprietorship, in common preparations (mixtures as ordinarily sold in this connection) is not wrong? Proprietorship of remedies produces a condition that makes it commercially necessary to make false claims and to fraudulently deceive the public in order to sell his stock to advantage. Is this not economically most unsound, inasmuch as it is against the welfare of the person and contrary to the interests of public health?

Skeletal Traction.—. J. Moorhead (*American Journal of Surgery,* May, 1925) finds that skeletal traction has demonstrated itself as a useful and safe procedure in certain recent fractures, particularly that group in which reduction and maintenance has hitherto demanded open correction with or without the use of nonabsorbable material, such as plates, wires, screws, bands or clamps. Certain fractures of the femur, notably the supracondylar group, are in many cases irreducible except by open operation or skeletal traction; the latter is preferable because safer and simpler. Skeletal traction has wide application in compound fractures because the traction medium can be introduced at a distance from the wound, and further because the necessary dressings can be unhampered inasmuch as splintage is reduced to the minimum. It permits ready inspection of the limb and lends itself to mobilization of the entire musculature and adjacent joints. With osteotomy through the fracture line skeletal traction replaces extensive operations in malunion.

Practical Therapeutics

THE USE OF SODIUM IODIDE INTRAVENOUSLY IN INFECTIONS AND ALLERGIES

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We know that infection by pathological organisms stimulates an immunity reaction. If adequate, the organisms are destroyed and the patient recovers; if inadequate, either death or a chronic or subacute condition ensues. The mechanism of the immunity reaction is as follows: the infecting organisms or their excretions, acting as antigens, stimulate the formation of amboceptors to bind them with complement and render them harmless. This is called complement fixation. Leucocytosis accompanies this reaction, probably for the purpose of destroying the end product.

However, another type of immunity reaction may be developed against substances parenterally introduced and normally nontoxic. It is first necessary, however, that the cells whose function it is to elaborate amboceptor be sensitized to these substances. The initial introduction produces no toxic effect. The organism apparently resents them, however, as entrants to the body in an unnatural way, and in two or three weeks is equipped to bind them in complement fixation should they again be introduced. That is, the process of sensitization is complete.

The first type of immunity we will call true immunity, as it is conservative and cannot as a rule be artificially destroyed, although there is a tendency for it to depreciate gradually. The second type of immunity is commonly called allergy or anaphylaxis. It is really a false immunity. It is characterized by an unusual or exaggerated specific susceptibility to substances normally nontoxic. However, it is nonconservative, usually permanent, but can be, at least temporarily, artificially destroyed. This false immunity is the result of a vicarious attempt of nature to protect herself against foreign dead substances entering the body in an unnatural way. Apparently, however, this attempt of nature at protection is more harmful than the presence of the foreign substance itself, for the product of this complement fixation is extremely toxic and the cause of all allergic and anaphylactic symptoms. This reaction is also accompanied by a leucocytosis, probably also for the purpose of destroying the end products of the reaction. The reason for the increased toxicity of the end products of complement fixation in the case of false immunity is not fully known, but might well be due to the elaboration of an imperfect amboceptor, thus permitting the formation of secondary end products of a toxic nature.

It is commonly believed that the introduction of any foreign substance into the blood stream calls forth a leucocytosis. I wish to suggest that it is merely as an accompaniment of complement fixation that this leucocytosis occurs. It is my belief that the foreign substance acts either directly or indirectly as antigen or antigen producer—that a complement fixation occurs and that phagocytosis exists to destroy the end products of complement fixation.

In treating a series of cases with sodium iodide intravenously I have observed what I believe to be the development of a true immunity against the organisms producing the pathological condition for which the treatments were given. In infections I have observed local reactions, general reactions, a marked increase in leucocytosis, recovery of the patient and a tendency to nonrecurrence of the infection. In control cases the leucocytosis is comparatively slight, and local and general reactions do not occur. However, as it is almost impossible to find a perfectly normal person, any slight increase in leucocytosis may be interpreted as a response to complement fixation in some degree, too slight at times for the production of clinical symptoms. All allergies show an existing real or relative leucocytosis, as evidence of the active presence of complement fixation. In these cases the intravenous use of sodium iodide paradoxically reduces the leucocytosis.

Do not misunderstand me. Leucocytosis may and does exist for other purposes than destroying the end products of a complement fixation reaction. However, in intravenous injections of foreign substances I believe *that* to be the action with which we are dealing.

It is by chance alone that sodium iodide was the salt that directed my attention to what I believe to be the real cause of the production of a leucocytosis following the intravenous use of any foreign substance. Yet I believe that it is the salt best adapted for this demonstration. Sodium iodide does not act primarily as an antigen; it is merely an antigen liberator, probably the best we have.

So far as I have been able to determine, sodium iodide has only two primary actions: First, it stimulates all living protoplasm; second, it promotes a lysis and distintegration of all dead and dying protoplasm and all pathological exudates. Perhaps the apparent specificity of the iodine ion in these actions is analogous to its action as an ingredient of thyrotoxin—the body's natural stimulator of metabolism. As a result of the second mentioned primary action of sodium iodide we get a sudden flood of split proteins and released bodies of dead bacteria entering the blood stream. It is these that act as antigen and stimulate amboceptor elaboration. Increased osmotic pressure of the blood and lowered viscosity of the lymph may materially hasten absorption of these broken down proteins.

To illustrate by a typical case.

CASE I.—Mrs. C. entered my office September 17th complaining of chronic soreness and tenderness in the right side. She had suffered from it for years. It was unrelieved by medical treatment. She had had an appendectomy years before, also the removal of a ruptured ectopic pregnancy on the right side. Her local and general symptoms led me to suspect a chronic cholecystitis. However, her symptoms were no worse this day than they had been for a year past. I took a blood count which showed 4,800 leucocytes,

60.5 per cent. polymorphonuclears, 36.5 per cent. lymphocytes, 1.5 per cent. each of large mononuclears and eosinophiles. I then gave her thirty-one grains of sodium iodide intravenously. This was about three o'clock in the afternoon. By six o'clock an acute pain had developed under the ribs on the right side. She ate a very light supper. After supper she vomited. The pain increased and the vomiting continued. I saw her at ten o'clock. She presented a typical picture of gallstone colic. The pain was so severe that she said she felt as though she were breaking in two in the middle. The tenderness was most marked over the region of the gallbladder, and the pain radiated from this region directly through the right side to the scapula. Her pulse was 80 and her temperature 98°. I called in a surgeon and his diagnosis was gallstone colic. Operation was refused that night, so I gave her a hypodermic injection of morphine and went home. Next morning I took a blood count, twenty hours after the first blood count and the injection of the sodium iodide. It showed 10,000 leucocytes, 85.5 per cent. polymorphonuclears, 14 per cent. lymphocytes. Her pulse was 80, temperature 99°. Operation was performed four hours later. A chronically infected gallbladder was removed. No gallstones were found.

The patient made a quick recovery and all pain disappeared. I believe the sodium iodide dissolved exudates and released bacterial proteins, thereby stimulating specific amboceptor elaboration and producing a local reaction. The general reaction was slight, but the leucocytosis was quite marked.

About a year ago I had been treating two cases of chronic pyelitis at intervals for months, by bladder irrigations and urinary antiseptics administered by mouth. In each case I finally tried sodium iodide intravenously. One case cleared up after three injections, the last being given on November 15, 1924. The other required a few more, the last being given on January 26, 1924. There was no recurrence in either case. It seemed as if an immunity had been established.

Case II.—I was called to treat a case of abrasion of the skin of the shin. The patient had treated herself for several days with home remedies. When I saw her the abrasion had become an indolent raw sore about two inches long and one quarter of an inch wide, directly over the tibia. It was inflamed over a radius of half an inch all around, and very tender. I prescribed a wet dressing of a mild antiseptic solution to be changed twice daily. After a week I saw this patient again. If there was any change in the condition of the wound it was not for the better. The base was indolent and ulcerative in appearance. The inflammatory area was dark red and increased in extent. The whole region was extremely sensitive to touch, and painful. I changed the wet dressing to one of aluminum acetate solution and continued for two days more.

My patient was becoming dissatisfied and alarmed, as there was not the slightest improvement. The pain, tenderness and aching were making her hysterical; so in desperation I decided to see if sodium iodide would stimulate healing. I told her I was going to give her something to purify her blood, and then injected thirty-one grains of sodium iodide intravenously. The pain was gone before she left my office. After six hours it gradually returned, and at the end of twenty-four hours it was worse than ever, and she had a temperature of 99.8°. The pain extended to her hip, and she said it felt as though it were boring right through the bone. On the other hand the edema about the wound had disappeared, and it looked healthier. The inflammatory area still persisted but had become pink. The patient said her head felt queer and she wondered if she were going crazy.

I decided to use another iodide injection to relieve the pain and aid in healing, as I felt the first injection had really benefited the local condition. This time I used the combination of sodium iodide and hexamethylenamine. The pain was relieved instantly, and the patient felt better generally, at once, and left the office in a very happy frame of mind. The wet dressings were continued, using boric acid solution and glycerine as at first. Four hours later the pain began to return. At the end of seven hours the whole leg was painful from her foot to her hip. I saw her at once and found her very hysterical, suffering acutely. The wound was oozing blood over its whole extent. The raw area had extended, having broken down whatever new skin formation had already taken place. The inflammatory area had increased to take in a radius of one inch all about the wound. It was more edematous than at any time. I confess I was much alarmed at her condition.

I continued the wet dressing, gave her a sedative and went home. The next day I saw her three times. Each time I felt there was some slight improvement in her general and local condition. Eighteen hours after this acute reaction the wound began to bleed again, so I changed the wet dressing once more to aluminum acetate solution. The following morning the wound appeared much better, the patient was feeling better in every way, and most pleasing of all, the tenderness, pain and aching had entirely disappeared. By that night the wound presented the most healthy appearance of any time up to the present. The inflammatory area was very narrow, and pink. The base of the wound looked healthy, and all edema was gone. From then on the wound healed as any normal wound should. In one week it was closed.

I regret I made no blood counts in this case. The Wassermann reaction was negative. I believe the iodide when first given dissolved the exudates in the neighborhood of the wound, and by suddenly releasing protein antigens into the blood stream provoked the elaboration of amboceptors to bind them in complement fixation. It was a mistake on my part, however, to give sodium iodide a second time in twenty-four hours, as in so doing I did not wait for the negative phase, and consequently produced a severe local and general reaction, analogous in a way to the result I might have expected if I had given a hypodermic injection of a vaccine twenty-four hours after an initial subtoxic injection.

Case III.—J. R. had had a thorough examination by the Life Extension Institute. Two teeth were found by x ray to show areas of rarefication at the apices. They gave him no trouble, but he did not feel his best. His mental processes were slow, he was easily fatigued, every act was an effort. After

receiving an injection of sodium iodide he complained that these two teeth were tender. They were extracted and found to be abscessed. Improvement in general health followed.

Case IV.—W. T. M. entered my office complaining of neuritis in the right shoulder of eight or nine months' duration. One tooth, supporting a bridge, had been very tender for two weeks. X rays showed no apical abscess. However, it was still very tender and showed a condition of pyorrhea. He had felt more exhausted, and tired more easily since this tooth had troubled him. A blood count was taken and showed: white cells 6,000, polymorphonuclears 53 per cent, lymphocytes 42 per cent, eosinophiles 3 per cent. Thirty-one grains of sodium iodide were given intravenously. Next day the tooth was much less tender and the patient felt better generally. The blood count showed 9,000 white cells, 60.5 per cent polymorphonuclears, lymphocytes 33.5 per cent, eosinophiles 5 per cent, and large mononuclears 1 per cent. The following day another injection of sodium iodide was given. The neuritis had practically disappeared after this, and all soreness had disappeared from the teeth. The patient felt stronger, was less exhausted and more like himself. Six days after the first injection another blood count was taken. It showed: white cells 7,000, polymorphonuclears 62.5 per cent, lymphocytes 32 per cent, eosinophiles 3.5 per cent, and large mononuclears 1 per cent. A third injection of sodium iodide was given. Next day a fourth blood count showed: white cells 7,600, polymorphonculears 76.5 per cent, lymphocytes 21 per cent, eosinophiles 1.5 per cent, large mononuclears 1 per cent.

(*To be concluded*)

NONSPECIFIC PROTEIN THERAPY IN PELVIC INFECTIONS

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In bringing nonspecific protein therapy again to the notice of the medical profession I may perhaps offer an apology for taking up their time with something that is not new. However one may be excused if the seriousness of pelvic infection is considered, the amount of suffering this condition causes to young womanhood, sapping their strength during the best years of their lives and often terminating fatally.

In this country credit must be given, in addition to Petersen, to G. Gellhorn for citing the beneficial results of protein therapy.

This method of treatment has not as yet gained the popularity it deserves and has not been used as extensively here as in many European clinics.

In several of the Central European clinics I have noticed that pelvic infections—whether after gonorrhea, after abortions or postpartum—are combatted by means of various nonspecific remedies such as colloidal iodine, colloidal silver, proteins and, in chronic cases, turpentine preparations.

In many of the Viennese clinics caseosan (a casein preparation) is in use. In Prague at Wagner's clinic cow's milk has been used for injections in a great number of cases. My own cases though limited in number were so uniformly satisfactory under milk treatment that I feel justified in reporting them here.

All my patients except one came under my observation quite early in their illness so that I was able to follow the cases from the very inception of the illness. Most frequently these patients showed signs of pelvic or generalized peritonitis following deliveries or attempts to induce criminal abortion.

In one case an attempt was made by intrauterine injections of drugs to induce abortion in a nonpregnant girl of eighteen years who thought herself gravid. She was taken violently ill with severe abdominal pain and was admitted to the hospital with symptoms of general peritonitis. Because of marked rigidity, extreme tenderness and small introitus, the pelvic examination was unsatisfactory. The temperature was high, the pulse rapid and thready. The usual peritonitis treatment was followed,—Fowler position, icebags, Murphy drip, sedatives and stimulants. When the more acute symptoms disappeared pelvic examination revealed a small conical cervix with pin point os, and a mass which filled out the entire pelvis and reached a few centimetres below the umbilicus. According to the size of the mass which could be taken to be the uterus, the patient appeared three and one half months pregnant. Colloidal iodine and colloidal silver had little influence on the condition of the patient. Then milk was used and the exudate cleared up rapidly leaving a small uterus. The patient was not pregnant; she has since passed through two normal menstrual periods with proper intervals and normal flow.

A second patient, who had a generally contracted pelvis and previous Cæsarean section which left a weak uterine scar, showed a large intramural fibroid. A classical Cæsarean section was performed with myomectomy and sterilization by resection of the interstitial portion of both tubes. After the operation an exudate appeared. It extended from the uterus to the fascia, forming a large hard mass which yielded admirably to milk injections.

Two additional examples selected from my series will indicate the variety of the cases successfully treated by milk injections.

A multiparous woman, whose husband showed signs of subacute gonorrhea, was taken ill with abdominal pain and fever, leucocyte count 18,500, polymorphonuclear 82 per cent. and was admitted to the hospital with acutely inflamed adnexa and an exudate in the posterior cul de sac. Repeated smears from cervix and meatus were negative for gonococci. The complement fixation of the blood was also negative.

Another multiparous woman came under my observation about three weeks after a normal delivery. She had been a ward patient in a well organized maternity hospital and, on the twelfth day, being apparently in good health, she had left that institution. Immediately upon reaching home she was taken ill and remained at home with nearly no medical care until her admission to another hospital where she was under my care. She appeared to be extremely sick, temperature 104 and 105°, leucocyte count 20,400, polymorphonuclear 78 per cent. There was an exudate in both broad ligaments. Several injections of milk were given. An absolute cure resulted.

In both of these cases when all acute symptoms disappeared the milk treatment was supplemented by hot douches and baking.

In the entire series of cases I used milk in the form of aolan, beginning with the injection of 5 c.c. and then increasing after the second or third injection to 10 c.c. In the majority of my patients the reactions after injection were much milder than those described by Gellhorn or some of the other observers who used ordinary sterilized milk with its naturally high bacterial count. Most of my patients complained of malaise to a greater or lesser degree, at times of pain in abdomen especially in that part where the lesion was greatest. It was only in the very sick patients that the first injections were followed by a marked rise in temperature. The majority of the patients showed great improvement with the first two or three injections, or else at least an arrest of the process of infection. The leucocytosis was always increased two to five thousand with the initial injections. This increase invariably appeared within six hours after the injection and within twenty-four hours disappeared gradually, until the preinjection count was reached. The leucocyte number usually changed little after the third injection.

Within twenty-four hours after the initial reaction had worn off, the patients often showed remarkable improvement. They rested better, partook more readily of food and in general became more hopeful. There was an appearance of well being and bodily comfort. In many cases that had not previously yielded to different kinds of treatment the improvement in general and local condition was amazing. The exudate at each examination appeared to be melting away. In some patients, however, the lesions proved to be more obdurate.

In none of my cases were there marked local reactions at the point of injection. The injections were administered intramuscularly in the buttocks at intervals of three to four days; later in the treatment these intervals were lengthened to seven days.

As I mentioned above my cases were acute when they came under my observation; most of the patients had been ill a few days or perhaps a week, except one who had suffered for a year, having exacerbations at the menstrual periods. Upon vaginal examination this patient presented in each laternal fornix a mass that was shading into the surrounding tissues. The left mass adhered to the rectum and could be felt bulging into it. There was marked rigidity, high fever, leucocytosis of 12,200. The patient vomited, had a sense of pressure in the rectum and seemed acutely ill. After several injections of milk (aolan) the subjective symptom subsided except for the sense of pressure in the rectum and the frequent desire to evacuate the bowels. The temperature dropped, rigidity disappeared, and on vaginal examination the masses in the lateral fornices became more clearly defined. A diagnosis of bilateral tuboovarian abscesses with the left one pointing into the rectum suggested itself. This was corroborated by operation, when a double tuboovarian abscess was removed with a pus pocket on the rectal wall. The patient made a speedy recovery. The postoperative course was unusually mild, perhaps because of the milk injections.

Previous to the milk injections, the first few patients of the series received intravenous injections of colloidal iodine in the form of a preparation called mirion and also one injection each of 5 c.c. of electrocollargol. These introductory injections seemed to exert no beneficial influence and consequently were abandoned in the later cases. The altered form of treatment, i. e., without the colloidal preparations, gave the same favorable results.

I saw those colloidal preparations used in European clinics in puerperal cases or after abortions on patients that were thought to be potentially infected; these were frequently women, who had been subjected to many examinations during delivery as in difficult forceps or in other intrauterine manipulations. Many had been treated outside of the clinics and had been brought in after unsuccessful attempts at delivery in the home. Many had been attended by midwives. Such cases received the colloidal injections rather as a prophylactic than as a curative measure. Those patients which I treated, on the other hand, came under my care not earlier than the third day of illness; most already had high fever and all signs of local or general peritonitis. Thus it is likely that the apparent failure of the colloidal preparations in my cases was due to the fact that the pathological changes were too far advanced to be influenced by the metallic colloids. These substances are administered as follows: Mirion is injected intravenously as follows:—first day, 0.5 c.c., second day, 1.0 c.c., third day, 1.5 c.c., fourth day, 2.0 c.c., fifth day, 2.0 c.c. A half hour after the last injection five c.c. of electrocollargol is administered intravenously.

Ordinary milk may be used if it is boiled in a water bath for ten minutes or pasteurized in an autoclave. Certified milk used after the usual boiling or pasteurization causes less violent reaction than common milk, without diminishing the efficiency of the results. This is said to be due to the relatively low microorganism content of certified milk. Milk does not cause perceptible local reaction when the fat has been removed by centrifugation. It is believed that the fat, because it is slowly absorbed, acts as a foreign body and hence causes severe local reaction. Many observers maintain that the rapid febrile reaction is the healing factor and that injections are followed by marked leucocytosis.

SUMMARY AND CONCLUSIONS

Injections of milk were made preferably in the gluteal region. The initial dose was five c.c., in very sick patients even less, and other injections followed at intervals of three to five days until all signs of the lesion disappeared or until the localization and improvement of conditions indicated operation. In my series of cases each patient required from three to eight injections. In cases that ultimately require operation, a preliminary course of milk injections localizes the process, renders operation easier and makes the postoperative course not nearly so tempestuous as is usually the case. Most of the patients did not exhibit severe reactions, the leucocytosis being not excessive and the course being entirely undramatic. Despite this, great strides were made toward recovery. Hence I infer that severe reactions after injection are not essential for cure. The physician must not forget fresh air, diet, or other supplementary methods of treatment.

The injection of milk proved to be of great value in my cases of pelvic infection and I recommend it to clinicians for further observation and study.

The author's references will appear in his reprints.

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Obstetrics and the Future

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Oliver Wendell Holmes, a noteworthy contributor to modern obstetrics, once said: "The great thing of this world is not so much where we stand as in what direction we are moving." When we survey our present day position in obstetrical science we may be said, in the happy phrases of the columnist, to both "point with pride" and "view with alarm." Such great gifts to humanity as those of Simpson and Semmelweiss cause us rightfully to lift our heads in the pride of their achievements, but, on the other hand, our acknowledged helplessness in the severe infections and toxemias makes us realize that in other fields our progress is but begun. Yet who is there today that does not earnestly believe that even these problems will some day be overcome? Scientists have ever properly ignored the "when" element in order to concentrate their effort on the "how."

Occasionally, however, it may not be wholly without profit to consider a time when these and others of our present day difficulties will have been solved. A stimulating and somewhat startling essay of this nature has recently come from the pen of a British scientist, Mr. J. B. S. Haldane. In his brochure, *Dædalus, or Science and the Future,* he has shown us in a not unentertaining manner some of the things that our race may expect in the far future, particularly in the field of genetics. One may spend a delightful hour carried on the wings of this author's imagination through the realms of ectogenesis and its phases of human application. This essay has a particular interest to obstetricians because they represent a group of medical scientists in whom the problems of race reproduction are ever imminent, and while many of the deductions of Haldane appear absurd, the most conservative scientist has learned today to admit possibilities for the future, even in such strange fields.

It is pleasing to speculate from the obstetrical point of view in the light of our present day knowledge what developments we may expect in our special field. Our imaginings may be but the first footsteps toward that extraordinary sphere pictured by our British colleague, but they are interesting nevertheless. Among the first things, we may expect with some certainty that thorough physical examinations will be required of both sexes before legal marriage is permitted. After this, if not before, microscopic and serological tests will demonstrate the question of the fertility of the union. Already in this field we may be said to have made an auspicious beginning. Before the inauguration of reproduction an examination of the prospective mother by physical, laboratory, and x ray methods will give exact knowledge of her ability to bear children. Even today this question has become of considerable importance. By means of the x ray and other physical agents we may now measure accurately the bony passages through which the child must pass, and by means of the laboratory and other tests the potential ability of such vital organs as the heart and kidneys may be determined. Reliable function tests for other organs, particularly the all important liver, unquestionably will soon be established. In the future all of these studies and others will be correlated with psychological studies of the individual so that proper motherhood will be entered upon by suitable persons.

The question of birth control, as the regulation of conception is commonly called, is already being settled. To anyone familiar with practices common in the educated classes today, the answer is certainly not in the negative. The problem, therefore, is but an extension of this knowledge to the masses. In the future, regulation of conception will be scientifically practised, and the race will then probably wonder why this ever was a debatable question.

In considering the problems of sterility, who doubts that the knowledge gained by our successful breeders of plants and animals will be eventually extended to the culture of human beings? For instance, artificial impregnation of the human species has been already successfully reported by numerous men in cases where natural impregnation failed to take place. The use of this measure in animals, particularly mares, is well known. In the future, knowing the date of insemination, by serological and other tests we shall know accurately when impregnation has taken place. The pioneer work of Abderhalden and his followers has begun the

solution of a problem which must certainly have a definite answer.

We may furthermore confidently believe that the complications of pregnancy that we now know will be eventually overcome and the prenatal period always act as that splendid stimulant to good health which one so frequently observes in individuals today. The activity and general mode of living of the prospective mother can and will be regulated so that this period of her existence will be looked upon as a normal, healthy process, and it will be also endowed with the sanctity that properly belongs to it. Our present prenatal activities are but the first steps.

Not only is it reasonable to believe that the sex of the offspring will be determined early at some future time, but one will be also able to predict whether a certain union will and will not produce dominant characteristics inherent in the parents. It is within a quarter of a century that our laws of heredity have been definitely formulated, but we should not forget that three hundred years ago Francis Bacon, in speaking of experiments in genetics on the famous island of Atlantis, wrote, "neither do we this by chance, but we know beforehand of what matter and commixture what kind of those creatures will arise." Even these things, therefore, are not new under the sun of our day.

The period of labor (probably another name will be substituted) will be approached with exact knowledge as to the time and cause of this phenomenon, and the patient enter a special institution for this event but a few hours before birth. The entire process will be, of course, painless. The array of agents used at present, nitrous oxide, ether, chloroform, morphine, scopolamine, magnesium sulphate, and spinal anesthesia, all represent attempts at the solution of a problem which has a final answer. It is quite probable that some modification of the last named will be the solution. This is stated in view of the fact that nerve blocking has been so successful in other parts of the body, and it is furthermore desirable because consciousness may be retained.

With regard to operative procedures we may expect that these will be performed even in a most distant day because disproportion will occasionally exist. One might, of course, imagine that by careful mating the size of the offspring might be regulated, and also the possibility of glandular therapy in early life and its influence on the formation of the bony pelvis might be thought of.

When we are brought to consider the great problem of obstetrical care for the masses in childbirth we see but one solution and that is the establishment of proper hospitals or institutions for this purpose. The care of women at home will always be an economic waste of time, material, and lives. With increased knowledge of the processes concerned in impregnation and pregnancy we shall have definite knowledge not only of the cause of labor but also of the time of this event. The problem for the rural districts becomes then principally one of transportation. These hospitals will probably be established and maintained by the state, for it will be eventually realized that good citizenship begins with proper motherhood. We may further expect that that these institutions will be something of the sort described so many years ago by Sir Thomas More, who, in the early part of the sixteenth century, wrote: "So well appointed and with all things necessary to health so furnished, and moreover so diligent attendance through the continual presence of cunning physicians is given, yet notwithstanding there is no sick person in all the city, that had not rather lie there than at home in his own house."

It is quite apparent to anyone familiar with the excellent midwife system in use in the larger British hospitals that in the future the care of women in childbirth will be relegated in the main to women trained in this science. Already the number of available trained men would be wholly inadequate to attempt work on any large scale and it is inconceivable that men of inferior medical training would be used. The development of the above named system offers unquestionably the best solution. Specialized surgeons will exist long after disease has vanished from the earth and among these will be those who will attend certain difficult cases of childbirth. This idea is by no means new but actually a reversion to the French system of two hundred and more years ago. The history of the human race seems to be replete with such repetitions.

The feeding of newborn infants in that distant day will assuredly be breast feeding. As the old Hindoo Gautama says, "Like the approach of the iron to the lodestone is the approach of the newborn child to the breast." In spite of our wonderful advances in human nutrition, artificial feeding of the newborn will disappear. From an economic as well as a physiological viewpoint Nature's way will triumph. The important role played by hormones in the inauguration and maintenance of breast feeding is now beginning to be understood. But a little time and if breast milk is not suitable, we shall know how to make it so.

It is a temptation to try and picture the care of the newborn in that far day. In our day the rapid advances in hygiene, nutrition and education of young children are almost bewildering. The eradication of disease, like rickets, scarlet fever and diphtheria which have taken place almost overnight are brilliant beacons lighting the way to successes hitherto unimagined. The great responsibility of the child from birth, then, as now, will belong to the pediatrist, the psychologist and the hygienist. The responsibility of the obstetrician ends with the advent of the healthy child at term.

We have not spoken of the important paternal role in future race production but this will not be neglected as at present. From a physiological viewpoint the father has a definite part to play. He not only has a right to understand fully the process by which his progeny is to enter the world, but his share in the preparation of that event is no inconsiderate one. We may conjecture that in the distant future, number of offspring may have a legal regulation. This will take place not only on a physical but also on an economic basis. We may also assume that family ties will not be swept away as has been predicted. On the other hand, they will be immeasurably strengthened. The privilege of replenishing the race will be looked upon in its proper sphere as a noble obligation. Man's moral growth must keep pace with his intellectual advance.

The foregoing is but an attempt to set down a few random thoughts on childbirth and the future of our race. While our greatest inspiration will be always found in the lives and achievements of those who made possible our science today, yet an occasional excursion like the above may be also helpful. May we not therefore divine that the Great Book has more than a moral meaning when it urges that "we make a stand upon the ancient way and then look about us, and discover what is the straight and right way, and so to walk it."

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Extrauterine Abdominal Pregnancy

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The abdominal type of extrauterine pregnancy is a comparatively rare condition. When it does occur, it is almost always secondary to a tubal pregnancy which has ended in tubal abortion or rupture without the death of the fetus.

At one time it was believed that the ovum could implant itself upon any portion of the peritoneum and thus give rise to a primary abdominal pregnancy.

Cases of this type have been reported in the literature, from time to time, but careful investigation of many of these have later proved them to be of the secondary variety.

The causes, therefore, of the abdominal type of extrauterine pregnancy would, in most instances, be the same as that of a tubal pregnancy. If a tubal pregnancy occurs and results in rupture or abortion, the condition being undiagnosed and the patient surviving, then an abdominal pregnancy may result, providing the placenta remains attached to the tubal wall or forms a new attachment to the peritoneal contents, thus maintaining its circulation.

Usually when a fetus has been extruded into the peritoneal cavity, it dies and becomes absorbed, unless it has attained a certain size before death, in which case absorption is impossible and the fetus either undergoes suppuration or becomes a lithopedium.

Since pyogenic bacteria often gain entrance into the gestation sac, the former may readily occur and the resulting abscess may rupture into the intestines or bladder depending upon its situation.

When an abdominal pregnancy occurs the usual symptoms of pregnancy persist, with the exception of pain which is present and the fetal movements are felt to a greater extent than in a uterine pregnancy. If the pregnancy goes to term, false labor usually sets in, the pain being similar in character to an early normal labor. These pains may continue for from a few hours to several days and eventually end with the death of the fetus. When this occurs the placental circulation becomes gradually abolished and the amniotic fluid becomes absorbed so that the patient may notice a sudden decrease in the size of her abdomen. After this initial decrease, the size remains stationary, the gestation sac becoming abscessed or the child, after a number of years, becoming mumified or converted into a lithopædium.

TREATMENT

The treatment of extrauterine abdominal pregnancy depends upon the stage in which the diagnosis is made and the condition of the patient. If the diagnosis is made early then operation should be advised immediately. If the diagnosis is made sometime later, the patient being in good condition and the fetus living, operation should be deferred until the child is viable.

If the case is handled properly the chance of a living baby is good. Horsley in 1912 reported a series of 138 cases where living babies resulted in cases of abdominal pregnancy.

At operation, whether it be performed early or late, the greatest danger is in the removal of the placenta. If done early the fetus being dead, removal of the placenta is not difficult, changes having taken place in its blood supply which greatly facilitates its removal.

When the operation is done either early or late, the fetus being alive, some operators advocate the closure of the abdomen without attempting the removal of the placenta and without instituting drainage, while others advise against removal but recommend the insertion of a drainage tube. Those advocating the latter method are in the majority. When removal of the placenta is attempted, in the case of a live fetus, bleeding is usually severe and may become uncontrollable.

Beck has proved by animal experimentation that three fifths of a human sterile placenta can readily be handled by the peritoneum of a dog. He also collected twelve cases of extrauterine abdominal pregnancy where operations were performed at term. In all of these cases the cords were cut close to the placenta and the latter with their membranes left *in situ*, the abdomen being closed without drainage. The mortality rate in these cases was thirty-three per cent. as against thirty-nine per cent. in a similar series where removal was attempted.

In our case partial removal was attempted and bleeding became alarming, packing and tube drainage were inserted and the remains of the placenta allowed to slough away, the patient making a good recovery, although convalescence in the beginning was stormy.

Case I.—Mrs. K., white, aged thirty-six, was admitted to the Mt. Sinai Hospital on March 8, 1925, with a diagnosis of peritonitis, due to an attempted criminal abortion. Chief complaint on admission was severe abdominal pain and tenderness. Past medical history was negative.

She had been married eight years, now a widow, husband died from influenza, two children living and well, no abortions. Until present illness menses were

regular, twenty-eight day type lasting four days, not accompanied by pain, used three napkins a day. Last normal period December 7, 1924.

The patient expected her period January 7, 1925, but it was delayed until January 16th, the flow was unlike her regular menses, being scanty in amount and lasted only one day. She also at this time experienced some nausea and lower abdominal pain. There was no evidence of the period she expected in February and around this time she suffered from several attacks of severe cramplike pains in the lower abdomen, which lasted for several hours.

A physician was consulted who diagnosed an early pregnancy and performed a dilatation and curettage on the patient in his office. After this, the patient bled slightly and suffered from continual abdominal pain. One week later a second physician was consulted who thought the patient was still pregnant.

Mrs. K. then returned to the first physician who again explored her uterus. After the second exploration patient became extremely sick, pains were constant and increased in severity, abdomen became distended and tender, there was extreme weakness and fever. At this time the patient was admitted to the hospital.

Examination on admission showed a well nourished female, who appeared to be very sick. Skin and mucous membrane very pale. Tongue dry and coated. Temperature 101°, pulse 140, respirations 26. The heart was rapid, no murmurs. The lungs were negative. The entire lower abdomen was distended, rigid and tender to pressure with a mass easily palpable in the right lower quadrant.

Vaginal examination showed the uterus slightly enlarged and softer than normal, with a large mass to the right and posterior to the uterus.

Blood examination showed red cells 2,816,000, hemoglobin 46 per cent., leucocytes 15,800, polymorphonuclear cells 81 per cent., small round cells 16 per cent., large round cells 3 per cent. Blood culture at the end of twenty-four hours was negative. The urine was negative except for a trace of albumin.

Taking into consideration the menstrual history, the character of the pains, the blood findings and the vaginal examination a diagnosis of an ectopic pregnancy was made with either rupture or tubal abortion plausible. This diagnosis was further strengthened when, on investigation, we were informed that the uterus, which had been explored on two occasions, was found apparently empty.

Consent was given to an operation. On opening the abdomen a considerable amount of clotted blood was found in the peritoneal cavity and attached to the cecum and omentum was a living gestation sac. The sac was ruptured and a fetus about ten cm. long removed. An attempt was made to remove the placenta but had to be abandoned on account of the excessive bleeding which resulted. Packing and a rubber tube were inserted to control the bleeding and permit drainage. The right fallopian tube, which showed evidence of tubal abortion, was not removed on account of the poor condition of the patient.

Recovery was complete, the patient being discharged from the hospital April 17, 1925, about six weeks after admission.

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Urology in the Female

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The close anatomical and physiological relations between the urinary tract and the reproductive organs of the female give rise to many interesting problems in the diagnosis and treatment of what the patient commonly terms "female trouble." The symptoms and signs of pathological conditions in one tract do so frequently resemble those of the other that a careful study must be made before the practitioner can begin a corrective treatment with reasonable expectation of successful results. Indeed the therapy in many cases must include diseased organs of the two systems.

The close relationship must not lead us into thinking that urinary symptoms are always dependent upon some existing lesion of the generative organs. Diseases of the urinary organs occur alone, or in conjunction with, but not dependent upon lesions of the genitals. Diseases of both systems may coexist, be caused by the same factor and yet not dependent the one upon the other.

The physiological changes of the genital organs during menstruation, coitus and pregnancy have their bearing on the urinary tract as have variations in the size and pressure of the bladder on the reproductive organs. Pelvic congestion during menstruation, sexual excitement and pregnancy often causes and frequently increases urinary symptoms.

The conscientious genitourinary surgeon, devoting his attention to urology exclusively, is necessarily more familiar with the urinary organs in both men and women than the gynecologist, who, often combining obstetrics with gynecology, hardly finds sufficient time to acquire, or, having acquired, to maintain a proficiency in all three specialties.

In a review of the anatomy of the female urethra, it will be found that it has much the same muscles, glands and histological tissue as the male urethra. While it is only about one inch in length it nevertheless is the seat of many extremely annoying symptoms.

Stevens in the study of two hundred nonpregnant women with urinary disturbances found that the symptoms were entirely due to urological conditions in seventy-three per cent.

Bugbee in a series of one thousand cases of frequency of urination, which is the most common symp-

tom of which the female complains, found that it was due to urological conditions in seventy-four per cent.

Dannreuther, a gynecologist, reported six hundred of his consecutive cases in private patients in which 119 or twenty per cent. required a cystoscopic examination to establish a diagnosis. He also says that fifteen per cent. of gynecological patients have some "definite lesion of the urinary tract."

A large percentage of what are loosely termed "female troubles" in girls and young women are urological conditions or urological and gynecological conditions combined. (My unbiased opinion would be about fifty per cent.)

In a brief discussion of urology in the female, which is my intention, I cannot take up the urethra, bladder, ureters and kidneys individually and go over the long roll of their pathology and give intelligent interpretations because the disease of one is not infrequently caused by disease in any one of the others.

As an example one finds that stricture of urethra and contraction of the vesical neck often causes infection of the ureters and kidneys and frequently destroying the function of the latter, and vice versa, infection, disease and abnormalities of the kidneys and ureters may cause some of the most frequent and annoying symptoms that are found in the female bladder and urethra. Owing to lack of space it will only be possible to touch upon the most common conditions.

More careful consideration should be given by the general practitioner, who sees the patient first. By a careful examination many of these cases can be successfully handled by him.

When called upon to diagnosis and treat a condition in the urinary tract of the female we must keep in mind that the symptoms of one may be caused by pathology in another. One should start by taking a complete history and making a complete urological examination. Inspection as well as abdominal palpation should be included in the examination as frequently palpable kidneys or areas of tenderness will give us a clue. The examination of the fresh voided and catheterized specimen of urine is important. Pus cells are not as important in the voided specimen of urine as the catheterized but red blood cells are. With a sterile catheter, the urine should be drawn into a long sterile test tube or other sterile receptacle. After viewing it macroscopically, it should be examined microscopically and chemically. The microscopic is by far the most important. Urine culture grown and guineapig inoculations when thought advisable should be carried out. Pus and red blood cells tell us nothing unless we know where they come from, therefore, when present demands further investigation. We will find in many cases our investigation should be carried further. Each ureter catheterized to the kidney pelvis, the character of the flow noted and the specimen collected and examined as above described. Function of each kidney should be taken at the same time.

It is almost a universal custom to have the patient bring to the office some of the urine voided in the morning for examination. Yet of what use is it to learn that the specimen contains ten grains of urea out of twenty grains of total solids to the ounce if the number of ounces in twenty-four hours is unknown? It is an easy matter to educate your patients to collect the urine for twenty-four hours and measure the total quantity and bring a four ounce specimen to the office.

The external meatus may be the seat of any number of conditions that give rise to urinary symptoms. The external urinary meatus may be contracted, strictured, dilated or have a caruncle or polypi. In the examination of the urethra with the endoscope, we may find it strictured or dilated somewhere in its course. Contracture of the vesical neck has caused much invalidism in young girls as well as adults and resulted in many needless operations. This same condition can give rise to residual urine, acute retention and a role of symptoms resembling prostatism in the male. Incontinence of urine caused by dilatation of the vesical neck and urethra is followed by distressing symptoms that are almost unbelievable. Of the two sphincters, the internal or involuntary is the stronger and most important in the female. Infection of the urethra by unclean, rough, or frequently repeated catheterization is usually the condition commonly and erroneously called cystitis, or "cold in the bladder."

URETHRITIS

Simple or nonspecific urethritis is by far the most common urethritis in the female, as should be expected when it is so close to the vagina, vulva and anus. Uncleanliness of the vagina and anus is responsible for many cases of urethritis. We would not be far from correct by stating that the colon bacillus is responsible for fifty per cent. of urethritis in the female.

A woman may have, in fact commonly does have, gonorrheal urethritis without knowing that she is the victim of any disease. She asserts and believes that there is "nothing the matter with her." It is only by painstaking search of the urethra, paraurethral ducts and glands that one can find the gonococcus. Therefore, it is unscientific and morally wrong to fail to prove by the most delicate bacteriological tests the presence of the gonococcus before a woman should be indicted of having gonorrhea.

The gonorrheal urethritis may extend to the trigone and cause a trigonitis but not further as the variety of epithelium changes here and the rest of the bladder is not favorable to the growth of the gonococcus.

In the cystoscopic examination of the bladder, we must note its capacity. Many misleading symptoms are caused by a bladder having an abnormally small capacity. The appearance of vesical neck, trigone, the ureteral openings, their size, shape, number and whether in normal location and appearance. Observe the mucous membrane of the bladder looking for trabeculations, diverticuli, ulcers, calculi, foreign bodies and tumors. Trigonitis is the cause of pain, frequency and irritability that is so often erroneously called cystitis. It is not a cystitis at all but a trigonitis.

The Almighty has given the female a poor organ for a bladder. In this he may be forgiven for he was not expected to know of the distortions it was to receive from without and its cavity a storehouse for anything from hairpins to the crucifix, besides being bathed with diseased products.

If I believed I had made a diagnosis of gonorrheal

cystitis or diagnosis of any primary cystitis, *per se*, I should hesitate to report it for the unfavorable criticism it would invoke. It is not unusual to hear (in meetings) a physician say in discussing his patient "that I treated her for many months for cystitis without relief." In this he is not bringing anything new to his fellows.

Cystitis rarely, if ever, occurs as a primary infection. Primary cystitis is not accompanied by temperature elevation. Always examine the complete urinary tract first for the cause of the cystitis. If not found there, look further for foci of infection. The cystitis will take care of itself if the cause is removed. Therefore, one can say without reservation that treatment of cystitis by bladder irrigation is a menace unless carried out in conjunction with the treatment of the cause thereof.

Catheterization followed by chills and fever is most always due to previous existing pyelonephritis. This applies to both male and female. Bacteria may be injected into the bladder without causing infection even in cases where trauma exists. It is remarkable how long a bladder will throw off infection in the absence of residual urine.

Any surgeon who elects to do the Kelly operation for incontinence or that for repair of vesicovaginal or uterovaginal fistula should be thoroughly trained in the use of the cystoscope or his results will be far from that which is desired.

ELUSIVE OR HUNNER'S ULCER

Genitourinary surgeons are familiar with the large number of patients with urinary symptoms who have been subjected to various abdominal and gynecological operations, without relief. In the female elusive or Hunner's ulcer of the bladder and stricture of the ureters is probably responsible for more mistakes in diagnosis than any other condition.

In elusive ulcer the female is more frequently attacked than the male. Of the symptoms, the most prominent are frequency and pain and mostly at night. They can only be diagnosed by the cystoscope and then only by one especially trained in looking for it. Best treatment is by direct application of silver nitrate and fulguration.

HEMATURIA

Since we are about to leave the bladder, we will consider hematuria. It may occur without symptoms or with pain and colic. Essential or idiopathic hematuria is but an expression of our inability to determine the cause and to gloss over the neglect to give the patient benefit of a complete examination. The fact that every cause cannot be determined is no excuse for not giving all of them a trial.

Hematuria is often intermittent and when it ceases the patient and physician are often lured into a sense of false security and the opportunity for early recognition of the pathology in its incipiency are often passed and in some instances the condition is beyond relief. A good axiom to be governed by is that every case of hematuria should be considered a grave pathological condition until proved otherwise. Even a few microscopical red blood cells in the urine should be considered grave until proved otherwise. The best time to examine a patient with hematuria is while the attack is on for then the cystoscopic examination will often establish the source and the cause. Character and shape of the clots are suggestive of the source.

Kretschmer reported 933 consecutive cases of hematuria in which he found that 331 were due to lesions of the kidney and 307 were due to lesions of the bladder. In hematuria of the bladder origin tumor is the most frequent cause.

STRICTURE OF URETERS

Strictures of the ureters are one of the most common lesions occurring in the abdomen in women and the man in general practice can make a most probable diagnosis if he will keep the symptoms in mind. The most common are:—frequency, dysuria, hematuria, nagging backache, ureteral and kidney colic, often resulting in hydroureter, hydronephrosis, and complete destruction of the kidney. In a large percentage of ureteral strictures the symptoms are referred to the bladder. A great many have urethral pathological conditions as well. Any of these conditions and particularly that of backache can be relieved by the simple procedure of dilating the ureters. Of those who are skeptical about ureteral strictures I would suggest that you ask some patients what they have to say about the relief they get from treatment. The patients having suffered from ureteral strictures are the best advertisers. It is a good rule to follow before advising operative procedure in obscure abdominal and pelvic pain in the female to have the ureters dilated. Large tumor masses have been caused to disappear by this simple procedure. No better reason for this exists than the appearance of many scars on the abdomen of females with ureteral stricture.

URETERAL AND KIDNEY CALCULI

It is a safe assertion that sixty to seventy per cent. of ureteral calculi pass spontaneously. Nature should be given a full opportunity augmented by interureteral manipulation through the cystoscope with ureteral catheters. This manipulation of one or more catheters inserted in ureters and left for several hours or over night, at regular intervals. It is surprising indeed, the size and number of stones that can be removed in this way and the patient not losing time from work. Crowell reported that out of thirty-one cases of ureteral calculi, twenty-nine were removed without any operative procedure except through cystoscope. Many others have reported like success. Vesical calculi are infrequent in women due to short and often large calibred urethra. When present they are mostly in diverticulated bladders or in cases of large cystocele and incomplete emptying of the bladder at each voiding. It is not uncommon to find vesical calculi in young girls. Stones in the kidney pelvis usually cause more damage than in other parts of the kidney. In examination of patients suffering with calculi, one will find them bilateral in about every sixth patient. Calcified glands, enteroliths, and phleboliths cast a shadow that can only be ruled out by stereoscopic pictures after the x ray catheter is in position.

PROLAPSED KIDNEY

As a rule kidney prolapse is simply an easily identified participant in a general visceroptosis. When a kidney prolapses as far as the true pelvis, however, there are two definite indications for radical corrective measures; Deitl's crisis and damage to renal his-

tological structures. Even then it is no use doing a nephropexy if the kidney function is destroyed.

KIDNEY TUMOR

The most common tumor of the kidney is a hypernephroma. It is a type of papillary carcinoma which is peculiar to the kidney. The slow growth of tumors in the bladder and kidney is peculiar to these two organs. Renal tumors of childhood belong to sarcomata class and grow very rapidly.

Failure to make an early diagnosis is due to:

1. Lack of appreciation of the significance of hematuria.
2. Inability to recognize the presence of small growths by physical examination.
3. Failure to consider renal tumor in the differential diagnosis.
4. Failure to appreciate the significance of small filling defects in the pyelogram. The changes in the size, shape, and contour of the pelvis and calyces can be decisively demonstrated in the usual pyelogram.

Hematuria is by long odds the most important symptoms of renal tumor and may extend over a period of years.

TUBERCULOSIS OF URINARY TRACT

Tuberculosis of the urinary tract should be suspected in a woman when the bladder is intolerant of even bland fluids; if the urine is persistently acid, or the capacity reduced to four ounces or less; if there is more involvement of one half of the trigone than the other, or there are obstinate ulcers on the bladder wall or marked distention of the ureteral orifice.

In any patient between the ages of fifteen and forty with pyuria of an apparently causeless nature continuing over a period of two to three months with frequency, nycturia, dysuria and acid urine, that proves negative to microorganisms by the ordinary staining methods one should search for the tubercle bacillus. Repeated examinations should be made together with guineapig inoculation.

In renal tuberculosis there are practically no urinary symptoms until the process has extended to the pelvis. Pyelitis and vesical symptoms promptly follow. Pregnancy aggravates urinary tuberculosis and if only one kidney is affected, it should be removed.

COMMENT

Emphasis should be made on the necessity for closer cooperation between the gynecologist and urologist and between the pediatrists and the urologist.

Urinary diseases occur frequently in infants and children and the successful pediatrists of today have frequent use for consulting the urologist in the diagnosis and treatment of diseases of children.

If the gynecologist does not wish to burden himself with the exacting demands of the urological field, he should at least be closely associated with a urologist, and if the urologist has not been well trained in gynecology, he cannot do justice to his female patients without consultation with the gynecologist.

Affections of one kidney may cause pain in the other—known as renorenal reflex. We are familiar with normal location, size, etc. of the various abdominal and pelvic organs in the female but we must always keep in mind that these organs may wander far from their natural habitat.

Ptosis, sagging of the kidney, kinks or strictures of ureters or the kidney failing to rise from its congenital position, will give rise to marked symptoms, the majority of which may appear to be pelvic. A kidney may be only one half its normal size or three times its normal size, may be an abdominal or pelvic organ and still be a kidney, a functioning one at that and possibly the only one of the two that is functioning. The opposite kidney may be normal in size, shape and location and be nonfunctioning. A kidney, much increased in size and reaching down to the pelvic brim may be a perfectly good kidney and its increased size being only a compensatory hypertrophy.

No abdominal or pelvic condition is ever so acute that an examination cannot be made. Nothing can be more acute than pyelitis, pain in hydronephrosis, calculus, ureteral kinks and strictures, etc., yet nearly all of them cannot only be relieved but cured without an open operation by manipulation through the cystoscope.

Pyelitis of pregnancy is almost always caused by pressure of the gravid uterus. The same cause can be assigned in many instances to hydronephrosis during pregnancy.

Christian Science, osteopaths and chiropractors have been made to flourish by our mistakes in the abdomen and pelvis of women. Not our inability or resources but neglect to use them and our being too esthetic to make proper examination. Symptoms should only be valued as ten per cent., pain at ten per cent. and examination eighty per cent. in making a diagnosis.

One should be guarded in what one says about adhesions causing symptoms and pains in abdominal pelvic conditions of the female. The possibility of remote causes should always be borne in mind and the localization in close proximity to some other organic condition which may be the immediate cause of the symptoms. This is well shown by the frequency with which operations for the correction of retro displacements will fail to cure backache. Backaches are often cured by dilating the ureters.

We must constantly regard the woman as our problem rather than the pelvis and that the genitals are not the whole of the pelvis and that there is nothing north of it. The specialty of urology was made necessary by the general surgeon and gynecologist. Many of them saw the difficulty of making a differential diagnosis of lesions of the urinary systems and the unfavorable results obtained when such was not made that a demand was necessarily made on the profession.

The acid test of surgery is "were the patient's symptoms entirely relieved". Any operation or any treatment that fails of this purpose is one hundred per cent. failure. The only way we can measure the relief given by our operations and treatments is by the followup system of cases. The cystoscope, ureteral catheter, the various renal functional tests are the work of the specialist, and upon them depends almost wholly our well founded belief that accurate diagnosis in lesions of the urinary tract is today not exceeded in any other branch of surgery.

As it has been by cooperation that civilization has made such rapid strides so it will be in medicine that the rapidity with which we advance will be in proportion to the earnestness with which the different branches cooperate with one another. In this way only will the maximum of cures be consummated.

CONCLUSIONS

1. Microscopical examination of the urine and the exudates of the urinary tract is more important than the clinical symptoms in making a diagnosis.

2. Many patients are deprived of prompt relief from symptoms because so many are willing to treat a woman for cystitis without actually demonstrating an inflammation of the bladder. Frequent and painful urination should not be called cystitis.

3. Fever is conspicuous by its absence in all cases of inflammation limited to the bladder.

4. A large percentage of gynecological patients require a cystoscopic examination to establish a diagnosis.

5. A large percentage of ureteral calculi will pass spontaneously after a dilatation of the ureters.

6. Cystoscopy, ureteral catheterization, pyeloureterography and pelvic lavage should be used in the diagnosis and treatment of pathological conditions of the urinary tract in the female infants and children.

7. Any patient with continuous pyuria, frequency, dysuria, with acid urine should be suspected of tuberculosis of urinary tract.

8. Hematuria is present in a large percentage of bladder and kidney tumors. Defective filling of calyces after opaque injection is strongly suggestive of tumor of kidney.

9. The advancement made in the profession of medicine is in direct proportion to the cooperation of the different branches. This is best illustrated in group practice.

10. With the armamentarium at hand today accurate diagnosis in lesions of the urinary tract is not exceeded in any branch of surgery.

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Treatment of Uncomplicated Gonorrhea in the Female

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The treatment of gonorrhea in the female has more often than not been notoriously inefficient—otherwise the records of general hospitals everywhere would not disclose such a large number of salpingectomies, and residual gonorrheas in the cervix, urethra, Skene's and Bartholin's glands would be less frequent. These patients have for the most part been treated by traditional and inefficient methods usually consisting of douches and tampons, and so generally it seems to have been beneath the dignity of the gynecologist or other surgeon who performs the salpingectomy to bother himself about the details of clearing up the residual gonorrhea. Or again, he is likely to use crude and inaccurate procedures such as extensive burning with the actual cautery which leaves in its wake much scar tissue, distortion, and stricture. Frank Kidd (1) has been probably the first to take up the subject thoroughly, comprehensively and in detail in a scientific and precise way.

In attempting to treat acute gonorrhea in the female, there are several factors to be considered: first, how efficacious is the treatment going to be; second, how can we help to prevent complications; and third, how much can the patient help in carrying on the treatment.

Vaginal douches have proved inefficacious except for cleansing purposes before other medication and for the reaction obtained from the heat in cases with cervical and pelvic engorgement when the hot douche is prolonged at a low elevation. Germicidal solutions used in this manner have been of little value, although astringent drugs that act by controlling vascular calibre have helped some.

Tampons are of some benefit by abstracting water from an engorged cervix; but after a tampon has been in the vagina for even a short time, there is usually a large amount of exudate from the tissues which is partially sealed in the vagina behind the tampon, not only hindering drainage but also precluding or diminishing the germicidal action of the medicament used, both by its dilution and also by the chemical action between the exudate and the germicide.

Vaginal suppositories have also proved of little value for the reason that gelatin melts with such difficulty and the resulting solution possesses small penetrating power. Those with a cocoa butter base, as well as ointments, are unsatisfactory because their greasy base partially prevents the action of the medicament on a moist surface.

Painting the vagina and cervix with silver salts and various other germicides leaves out to some extent the endocervix, and they are usually neutralized almost immediately in the ensuing chemical reaction with the chlorides in the secretions and the proteins.

I have used sprays through a vaginal speculum with various medicaments, including dichloramine T. This particular drug was inefficient possibly because

of the fact that it was an oily solution intended to act on a moist mucous surface; sometimes it caused marked excoriation.

I believe that in order to treat successfully acute gonorrhea in the female, we must have good drainage and, as far as possible, frequent or semicontinuous medication to the vagina with an agent that does not react chemically with the inorganic salts and proteins of normal and pathological secretions so as to convert it into a chemically inactive substance and, at the same time, have so little viscosity and great penetrating power. One substance which most nearly seems to meet these requirements is one of the flavines—usually acriflavine—and in a small series of cases (first attacks), which were as yet uncomplicated by salpingitis, the response shown was remarkable. Its use is attended with considerable inconvenience and, as so many of these young women are not immediately ill and do not take their disease seriously, at least to the extent of following explicit directions if they happen to be onerous, and also due to the fact that they must so very often conceal it from members of the family or persons with whom they live, and the fact that acriflavine, like many other drugs, is so apt to leave telltale stains, it will not be found universally applicable. However, it is far more practicable than visiting a physician's office at least once a day.

TECHNIC OF TREATMENT

I suggest the following technic: In the first place, it must be demonstrated on the patient by a nurse who has been trained to do this properly. Procure for the patient a rubber sheet which is placed on the bed or couch after the manner of an ordinary draw sheet. While this protects the bed, a little spilled tends to run over the rubber in drops. To avoid this, place on top of the rubber sheet a cotton blanket folded and refolded to the size of say two feet square on which the patient's buttocks rest, with the covers pulled down to the ankles. This may be reused many times without laundering. Having first partially filled a glass on a stand or chair alongside the bed or couch with about twenty-five c. c. of acriflavine solution—one to five hundred to one to fifteen hundred in strength—from which glass of solution a Day syringe is inserted in the vagina and gently emptied. (The vagina should have been previously cleansed by a douche.)

If the patient injects this acriflavine solution in the manner described after she has assumed the recumbent position and remains recumbent for at least half an hour, the acriflavine solution will have abundant opportunity to penetrate into the walls and mucous glands of the cervix and endocervix and not be precipitated and rendered inert like most silver salts by the secretions. This procedure carried out twice a day will, in most cases, rapidly relieve the cervical gonorrhea and vaginitis, and this is also true even though it is an old case with salpingitis and an acute lighting up of the cervicitis, although it has no direct effect on the salpingitis. It cannot, of course, have any effect on bartholinitis. But the quicker the cervical gonorrhea can be cleared up without radical measures, the less probable the patient is to have later involvement of either the tubes of Bartholin's glands. Perhaps other drugs may prove equally beneficial. Certainly the silver preparations with the larger colloidal molecules, like argyrol, do not penetrate deeply enough. Perhaps none of the organic salts surpass protargol (which is also more economical in that it can be used in more dilute solutions). It has considerable penetrating power and yet can be used in sufficiently strong solution without irritation, so that the proportion of the drug left over after the remainder of the drug has reacted with the secretions is certainly over fifty per cent. if the solution in sufficient strength is used in liberal quantity. A considerable factor, I believe, is due to the fact that the vagina remains filled (although not distended) for a sufficient length of time to allow penetration into the endocervix and the cervical glands, including the endocervical crypts, and for this reason it seems superior to Kidd's method of simply swabbing with flavine solution, especially if the endocervix is swabbed out from time to time with acriflavin or silver nitrate solution after removing the plug of mucopus, as Kidd and others recommend. Nitrate of silver solution employed in the same way, if not used very strong, would be immediately neutralized by chlorides and proteins and its effect would be very fleeting.

For urethritis, ordinarily the gentle instillation of forty to fifty c. c. of acriflavine solution—one to three thousand to one to one thousand into the bladder through a glass catheter and having the patient urinate immediately afterwards is recommended. The urethra is distended by the act of urination and the flavine solution comes in contact with its every portion.

If a trigonitis and severe inflammation of the neck of the bladder should develop, sometimes even to the extent of causing a terminal hematuria which, viewed cystoscopically, shows often a fibrinous deposition over an excoriation at the neck, instillations of argyrol—about two per cent.—in the same quantities and having the patient urinate immediately afterwards is advised. In a certain percentage of cases, acriflavine fails and then other drugs must be employed.

For dysuria santol oil may at times be of value; but for this distress an abundance of fluids with sodium citrate in thirty grain doses four times a day is more reliable. Food substances which irritate the urethra are interdicted, such as alcohol, ginger ale, asparagus, onions, radishes, cabbage, condiments, pickled or spiced foods, and vinegar. Tea and coffee are beneficial because they are diuretic. Lemonade and most fruit juices are also beneficial; the acids in these are oxidized to carbonates and tend to alkalinize, rather than acidify, the urine (vinegar excepted). Prohibiting tomatoes and other articles of diet containing oxalic acid is entirely unnecessary.

For details of the treatment of gonorrheal skenitis, bartholinitis, or residual gonorrhea in the cervix, intentionally not considered in these notes, the reader is referred to Kidd's monograph (1). To advocate this method of applying the local medicament to the cervix and urethra in early uncomplicated cases has been my only purpose—not to discuss complications or extensions of the disease.

REFERENCES

1. KIDD, FRANK: *Common Infections of the Female Urethra and Cervix*, Oxford Press, 1924.

Early Signs of Pregnancy

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I wish to recount here some new phases of early pregnancy which I have gathered during seventeen years of observation on innumerable private hospital and dispensary patients, with a view of discovering new signs. I will only touch upon old signs wherever I have original explanations to offer or wherever I can throw new light on them or whenever, by so doing, I can better emphasize my own signs and symptoms.

As for the objective signs I will limit myself to those only which are elicited by palpation and which appear principally during the first half of the first trimester.

Constipation.—If absent, it will appear, if previously present, it will become increased. In a small number of cases the constipation is spontaneously relieved, even to the extent of producing a mild diarrhea.

Bladder symptoms.—Increased frequency of urination. If this condition has previously existed, it will sometimes become normal. The frequency of urination is as a rule attributed to pressure of the uterus on the bladder, but since this manifestation presents itself before there is sufficient change in weight, size or position to make this possible, and moreover, since in certain cases it even relieves the frequency, it must therefore be explained on a different basis, and the most logical is that it is of reflex, nervous origin; at a later period this may be combined with direct pressure.

Vaginal discharge.—If absent, it will appear. If previously present, it will increase in quantity or it will assume a darker hue or a thicker consistency or all combined. In some cases the leucorrhea will spontaneously disappear if previously present. This leucorrheal manifestation in the very beginning is of less significance in patients who experience a discharge a number of days before the menstrual onset.

Objective signs.—To elicit them a relaxed abdomen is essential, and in order to obtain it the lubricated fingers should manipulate slowly and gently in the presence of an empty bladder and rectum, and particularly the former. But with neurotics and in the case of patients in a state of embarrassment, or in case of pelvic disease, this will not be sufficient, for when told to relax, such patients become more rigid—they are too nervous or they do not know how to relax. For this reason I will tell here my part of a dialogue with a patient of this type during an examination: "Keep hands down loosely at your sides; don't hold your breath; breathe perfectly natural; don't resist—in order to feel your womb I must press my fingers deeply into your abdomen, and when you hold your breath even slightly, or when you resist, this is impossible. To prevent causing you pain and to enable me to give you the information you came for, you must breathe out fully." A pleasant voice and demeanor are helpful. In many cases simply telling patients not to hold their breath is sufficient to cause relaxation.

POSITION

1, Anteversion, and 2, descension: The anteversion is actual, partly on account of the increased weight of the body of the uterus due to pregnancy and partly on account of the early softening of the isthmus uteri, even if this may not be evident on palpation, thus permitting the heavier body to fall forward by means of gravity; and relative, as a result of the descension.

3. Dextroversion: Usually attributed to the presence of rectum and sigmoid on left side and to increased constipation. The position of these organs does not change during pregnancy, and how that could account for dextroversion is hard to understand. As for constipation, women as a rule are constipated more or less all the time, and there is usually no dextroversion in the nonpregnant state, and when present this is not altered after evacuation of the bowels. If it would have any effect at all it would, unless the cervix is held by adhesions, force the whole uterus to the right; or, since the contact of the distended rectum with the uterus is just as apt to be with the left side of the cervix as with the body of the uterus, it would just as often cause a sinistra version; and besides this version continues after the weight of the uterus is sufficient to overcome any displacing effect it might have. (The distended rectum, as well as the distended bladder, often causes an ascensus uteri.) We must look for other reasons, and I would suggest the following:

a. A predisposition being present, gravity and descent operate here the same as in cases of anteversion.

b. It may be held in that position by inflammatory adhesions.

c. The uterine supports may not be of equal length or tonicity, and in the same way that they permit in the nongravid state anteversion and retroversion, they may likewise create a version to the right or left, and there are such cases regardless of pregnancy. But with these we are not concerned now. This condition of the ligaments, if it does not create actual version, causes a predisposition to version, or slight inclination, even if this is too slight to be elicited by palpation. But under conditions of pregnancy, when the weight and size of the uterus is increased, no matter how slightly, it will be sufficient to draw the uterus to one side. This occurrence, however, frequently happens before there is an apparently reasonable increase in weight to effect such a change, so we must look for still further reasons, and they are:

d. Predilection of women to sleep on the right side.

e. All women, unless they are lefthanded, perform their daily activities, such as lifting, carrying, throwing, sewing, hammering, and movements of the like, with their right hands, and every time this is done a pressure wave is started and transmitted downward and across the lower part of the pelvis to the left, where it gets lost, and every time the force of this wave strikes the pelvic organs on the right side, including the cervix, these organs are swayed to the

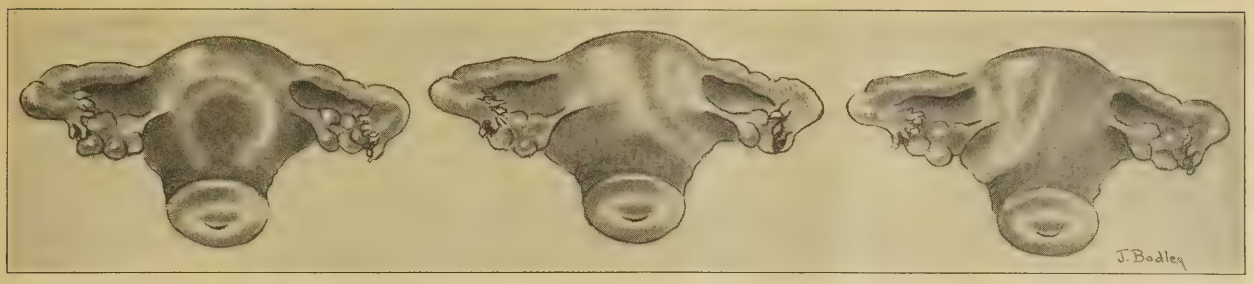

FIG. 1 Fig. 2 FIG. 3

FIG. 1.—Early softening of uterus anteroposteriorly before changes in shape or size appear. Posterior softening not shown.

FIG. 2 and FIG. 3.—Softening beginning at lateral extremities which progress toward the opposite side anteroposteriorly.

left, while the body of the uterus, in consequence, is temporarily swayed to the right, and so a predisposition for the uterus to tilt to the right is created. For the same reason that the right side of the body bears the brunt of the physical exertion and is therefore more perfectly developed than the left side, it follows as a natural consequence that the right tube and ovary are also more developed for their respective functions, and as a result, f, impregnation takes place more often in the right tube than in the left. Consequently hyperemia, relaxation and sagging take place on the right side sooner or in a more marked degree than on the left, so as to permit dextroversion.

4. Sinistra version: Adhesions, conditions of the uterine supports, gravity and descent and predilection for sleeping on the left side and impregnation in the left tube operate here as well as in cases of dextroversion. In women who are lefthanded the pressure wave operates identically the same as on the right side but from left to right.

In conditions of dextroversion or sinistra version prior to pregnancy the action of the pressure wave on the right side or left side will operate to maintain the respective positions, by the impulse of the wave, instead of striking one side of the cervix strikes the whole body of the uterus and cervix, and so helps to maintain the respective versions.

Since dextroversions are so vastly predominant there must be a combination of the above mentioned causes producing them.

Fixation.—In at least thirty per cent. of the cases soon after descent, anterversion or dextroversion has taken place, the mobility of the uterus becomes limited or entirely fixed during the early weeks (or even months) of pregnancy, owing partly to the fact that the uterine ligaments in these cases fail to infiltrate proportionately to the softening and enlargement of the uterus.

Shape will be described in conjunction with consistency and enlargement.

Enlargement.—This goes hand in hand with one or more subjective symptoms and one or more objective signs and may consist of a progressive enlargement with changes in shape or simple increase in size with the original contour of uterus retained. Before the cardinal signs of pregnancy appear the enlargement is as a rule more marked laterally, diagonally, or anteroposteriorly, or in combinations of these; but in the class of cases where the original contour is retained, the uterus is as a rule at first so uniformly, tensely cystic that the isthmus and supravaginal portion are also distended; but the infravaginal portion, or more properly the portion below the flexion or below the internal os, does not yield readily to this distention, and as a result of the anteversion and tension above and the resistance offered anteriorly at the flexion but more particularly at the internal os, where the tissues are more developed and of firmer consistency, the rest of the cervix bends sharply forward, forming an acute angle with the rest of the uterus, and in consequence of which the longitudinal diameter of the uterus is increased out of proportion to all the others and the cervix is reduced to the size of one half inch or less, and more particularly so, its circumference.

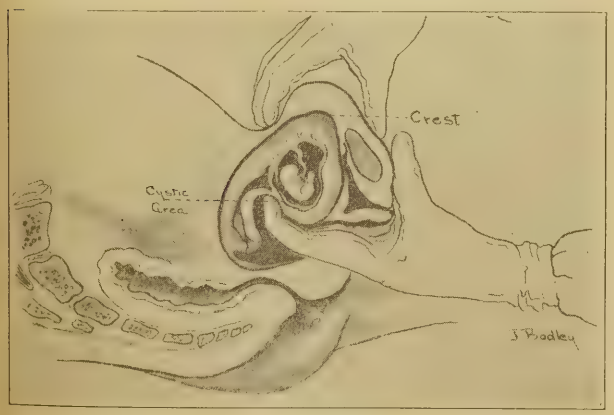

FIG. 4.—Shows cystic area and other features as described under heading of "softening at lower uterine segment." Also crest, ridge or eminence formed by the continuation of the fibres of the tubes, uteroovarian and round ligaments.

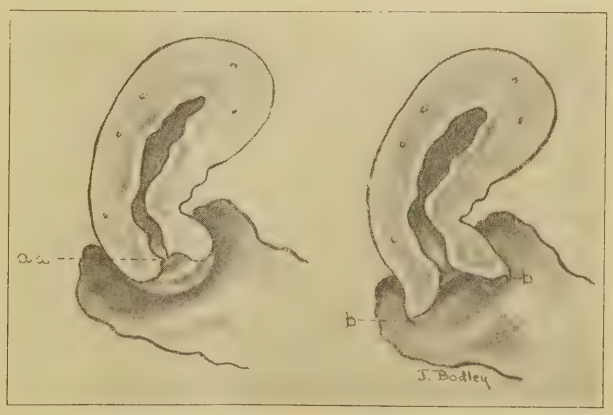

FIG. 5.—aa Represents the edge formed at the junction of the vaginocervical mucous membrane with the lining of the cervical canal within the external os, in intact cervices. bb is the same as aa in cases of torn cervices with eversion. Looking from within outward is shown the band spanning across the angle of the tear.

Consistency.—Hegar's sign; softening of cervix. Before the consistency of the uterus becomes uniform certain portions of it soften first, and I will begin with the one which is considered the most important, i. e., Hegar's sign. The majority of textbooks varyingly describe this sign as consisting of a marked compressibility or softening process of the lower uterine segment at its junction with the cervix, or it includes the supravaginal portion of the same, and others describe it as a marked softening of the isthmus uteri, and they all lay so much stress on its presence and on the methods of its elicitation that one gets the impression that it is the earliest, most constant, and most reliable sign of pregnancy.

As it is thus described, this sign is of but trivial and doubtful diagnostic value, as such a condition, or one closely similar, is present in many apparently normal and healthy nongravid uteri, in many postmenstrual and postabortive states and in many unhealthy uteri where the cervix, isthmus, and corpus are of even consistency, and in most other cases where there is no organic flexion. In other words, where the bend at the corpora cervical junction is only relative, that is instead of forming a sharp angle it consists of a soft angle or a curve; or there may be a complete absence of an isthmus uteri and the body and cervix form more or less of an elongated cone, or the lower segment and cervix simply form an appendage to the body, and the only landmark between the body and external os is the narrow convex or concave border ring constituting the internal os, the position of which is inconstant and bears no relation to the isthmus uteri if present or to the cervicovaginal junction and may be located at, above, or below either one. This also helps to explain the uselessness of McDonald's sign, which consists of ability to turn the cervix on the anterior wall of the body of the uterus.

In the aforementioned nongravid class of cases I was, in addition to turning the cervix on the anterior wall of uterus, also able to straighten the cervix so as to correspond with the longitudinal diameter of the body of the uterus, and in many cases I would extend it far enough posteriorly without effort so as to reverse the flexion. The softening which constitutes Hegar's sign I consider, in the absence of conditions where it is normally found, of value only in cases where there are *a firm corpus uteri above and a firm cervix below,* with the circumference of the intervening part unchanged or increased (and frequently the whole flexion or isthmus, if previously present, obliterated, forming a cone shape), but of such cystic, edematous or doughy consistency as to apparently disappear under gentle pressure. Above the softening merges gradually into the body of the uterus or it terminates in a line of demarcation which is continuous with the rest of the uterus, and as pregnancy advances this line of demarcation rises to a higher level until it disappears in the general softening process. Below, in the early stage, it embraces part of the supravaginal portion of the cervix, and later all of it, thus converting the cervix into a short stump; and later the infravaginal portion, and particularly the portion forming the external os, unless prevented by the presence of scar tissue, is also softened. At this time there is, as a rule, already present a general softening and enlargement, and Hegar's sign, if still present, is of corroborative value only. In case of a normally generally soft uterus Hegar's sign is of value only in the presence of a cystic bulging higher up, anteriorly, sometimes posteriorly and occasionally laterally, with harder demarcation limits; and here it is superfluous. Not infrequently we find the anterior half of the cervix softened as just described and the posterior half very slightly changed or not at all. This condition takes place principally in those cases of marked anteflexion where the lower portions of the body of the uterus and the upper portion of the cervix, posteriorly, form an area harder than the rest of the uterus, a condition which is frequently present in cases of primary sterility; in some retroflexed uteri this condition is present anteriorly.

Softening of the cervix, of a quality attributed to that of Hegar's sign, which may be a continuation of the same, even if it has already disappeared at this period, or independently of it as a result of softening higher up and elicited by bimanual examination in the same manner as Hegar's sign, is, in selected cases and in conjunction with other signs, significant of pregnancy.

It is taught and universally believed that softening of the cervix is one of the early signs of pregnancy. As already mentioned herein, all normal and healthy uteri have soft cervices and, as a rule, of the same consistency as the body of the uterus. But there is no primary softening due to pregnancy. If found, it has been soft previously or is secondary to softening higher up. The truth is that in most multiparous cervices and in all markedly flexed primiparous uteri the cervix is harder than the body of the uterus and is the last part of the uterus to soften, and when it does it is always in a proportionately less degree than the rest of the uterus.

Softening at lower end of corpus uteri.—Frequently, particularly in anteflexed uteri, there may not be any softening on superficial examination, and the softening can only be elicited by fixing the uterus between internal and external hand and following and gently forcing the tips of fingers from the cervix up the lower uterine segment upward in the direction of the fundus, where a cystic consistency will be elicited. It can be illustrated by a cone with firm walls filled with fluid, and this fluid can only be felt through the lower open pointed end. In its anterior aspect is a more or less hard line of demarcation, which is continuous with the rest of the uterus anteriorly, but posteriorly it is soft or hard and without a line of demarcation; or, to be more exact, this picture can be compared to the back of the head and neck representing the anterior surface of the body of the uterus and cervix respectively, the finger pressing into the nape of the neck upward into the foramen magnum where the cystic area is felt, and the occiput and adjacent surface representing the hard line of demarcation continuous with the rest of the anterior wall. At a somewhat later period the harder bulging of anterior wall corresponding to the occiput also becomes cystic with harder borders of demarcation, the anterior surface becoming either more convex or flat or concave if softening is more marked posteriorly with the resulting increase in the lateral diameter and, as a rule, more to the right than to the left. Less typically this cystic manifestation can sometimes be elicited on the right or left side of the uterus.

Here I wish to add that all the varieties and degrees of uterine softening are represented by the consistency of the anterior fontanelle in different newly born children during states of rest, straining or crying.

There are still other signs elicited by palpation which occur frequently and which are pronounced and reliable, and a very prominent one is a projecting mass from the right side of the uterus, sometimes taking the shape of a walnut and at other times of a butternut of varying sizes, and as a rule harder than the rest of the uterus, but occasionally softer, the lower border of which starts on a level with the isthmus or internal os and extends outward and downward forming more or less of a triangular space between it and the cervix. The clearness and readiness with which this sign is elicited is partly due to the dextro and anteversion of the uterus which is present at this time. Internally and above it merges into the body of the uterus with a more or less marked line or groove of demarcation. Coincident with this, or separately, the left cornu is also harder and occasionally softer than the rest of the uterus and extends, though less prominently, in a direction upward and outward.

Softening of lateral extremities of uterus.—Softening may start at extreme right or extreme left edge of the body of the uterus, with line of demarcation (in this case it is flat on palpation) and extends toward opposite direction anteroposteriorly, joining with the opposite side at or beyond three months of gestation. The lines of demarcation shift with the extent of the softening and may be marked or gradual according to the consistency of the uterus.

Softening of the anterior wall.—It may be present at a soft circular or ovoid shaped area on the anterior wall of body of uterus with a harder border of demarcation, the lower border of which soon becomes illdefined and terminates at some point in the lower uterine segment, with no other change in shape, size or consistency until this softening increases; or the softening may start in the upper end of anterior wall, and in these cases it presents an anterior cystic convexity.

Softening of posterior uterine wall.—As a rule the softening process of the anterior wall is simultaneous with that of the posterior wall, but it is apparently less marked posteriorly on account of its more difficult accessibility and on account of the frequent early, exaggerated anteversion, with the resultant gravity of the circulation and of the ovum, or of either, anteriorly, the anterior wall is more bulging than the posterior, and the latter, therefore, seems relatively flat; but by obtaining sufficient control the posterior wall is usually found very soft.

Softening of the lower or middle part of the posterior wall of the uterus, when softening anteriorly is doubtful and the uterus cannot be brought forward, can be elicited by forcing the body of the uterus backward and downward and following finger up posteriorly above the isthmus. Frequently the softening and bulging is more marked on the posterior wall, and in these cases the anterior wall feels concave or flat. When the softening begins in the middle of the uterus anteroposteriorly before there is any palpable bulging the lateral diameter is increased (and more to the right than to the left), and the anteroposterior diameter. while yet unchanged, or even when somewhat enlarged, feels relatively narrowed. Frequently the anteroposterior softening is so uniformly eccentric and the rest of the distal portion so little changed in shape or consistency that it forms, with the exception at the isthmus, a perfect border around the softened area.

More or less uniformly rapid enlargement and softening of the whole body of the uterus takes place in conditions of marked anteflexion or in other cases with cervices of unusually hard consistency.

In most of the chronic subinvoluted or fibrotic uteri, with their characteristically hard consistency, the very first objective indication of pregnancy is a superficial, uniform softening of the entire uterus, which soon deepens and then becomes either uniformly cystic or irregularly nodular with edematous or cystic zones between the nodules followed by changes in shape, size and position. This is the class of cases in which early diagnosis is most difficult.

Fundus uteri.—The continuation of the fibres combining the tubes and uteroovarian and round ligaments forms a well defined palpable ridge or crest or eminence running across the transverse diameter of the fundus of the uterus, which always draws a line of demarcation between the anterior and the posterior walls, becoming more pronounced during pregnancy on account of subjacent softening, and is usually painful to palpation at the cornu corresponding to the side of maximum softening of the body of the uterus and does not, as a rule, entirely disappear up to a period beyond three months of gestation. Its location is toward the posterior aspect of fundus when softening is more pronounced anteriorly, and toward the anterior aspect when softening is more marked posteriorly. Postpartum this crest is the first thing to reappear and frequently it does so with the expulsion of the fetus and placents.

Mucous membrane at external os.—When the uterus has softened sufficiently to involve more or less the whole cervix, which not infrequently happens during the period within the scope of this article (but as a rule at a later period), the mucous membrane of the vaginal portion of the cervix at its junction with the mucous lining of the cervical canal can in the majority of cases, while gently moving finger from within outward and from without inward, be felt as a soft, thin, yielding, and somewhat detached edge, just within the external os or on the external edge of it at a later period and in cases of eversion. In cervical tears with little or no scar tissue this sign can be felt in the angle of it as a thin band spanning across it, with the edge soft, yielding and detached as above, and appears much sooner than at the portion of the original external os. I never found this sign present in any other condition than pregnancy. I have, however, met a somewhat similar condition in the nonpregnant state in cases of torn cervix with eversion and induration of the lips and in a number of cases of cervical polypi; but here it was present as a well defined, comparatively thick, tense, unyielding, and undetached edge or membrane, which could in no way be confounded with the one of pregnancy.

Mucous lining of the cervical canal.—During the period that the edge formed by the cervical mucous membrane appears, or coincident with its presence,

the mucous lining of the cervical canal usually takes on a finely or roughly granular softening on palpation, which breaks down upon touch or slight pressure with the palmar surface of finger and the moment this takes place an impression of a low toned, short, crepitant or crackling sound is conveyed to the mind. This impression should not be confounded with the scratching or tearing sound caused by the rubbing of the nail against the tissues.

GENERAL CONSIDERATIONS

In the beginning of pregnancy there may not be any subjective symptoms, or there may be one or more; the same thing holds true of the objective signs. There is present, as a rule, a combination of the signs and symptoms.

Although the subjective signs and symptoms may vary with each pregnancy—but during the period of pregnancy under consideration they are more or less constant—the objective signs, on the other hand, during the same period are inconstant. A certain sign being present on one examination, on the following examination, while there may be an elaboration of the same, it is just as likely to be found to be ill defined, covered, or obliterated by new signs as a result of the constantly progressive process of softening and growth; and these processes in turn are in a measure inhibited, modified or controlled by the contractions and relaxations of the uterus, but more so by the irregular, incomplete, and slow contractions and relaxations, and in some cases instead of finding a certain sign in the same location, it may be situated in a modified form in a diametrically or directly opposite position, or in more than one position, or instead of finding part or all of the uterus in an increased state of softening, it may be found to be of a firmer consistency, and instead of an increase in size there may be none, or it may even appear smaller than previously, but on the whole seldom losing the characteristic consistency of pregnancy; frequently a later examination may have to be made.

The proper elicitation of the objective signs and their correct interpretation is largely dependent on the amount of deliberation, gentleness and slowness with which the manipulations are carried out.

To those with little or no experience, more than one examination cannot be too strongly urged.

1851 SEVENTH AVENUE.

Glucose as an Oxytocic

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There are two classes of oxytocics, those that strengthen normal rhythmic contractions and those that produce abnormal contractions of the uterus. Pituitary extract is a typical example of the latter class, for even in the smallest doses it produces an incomplete tetanus, i. e., one contraction after another without any period of relaxation between. Glucose is an excellent example of the first class.

Bossi (1) in 1893 called attention to the ecbolic action of sugar in cases of inertia. Vignes (2) explains its action on the supposition that sugar replaced the reserve glycogen that was used up in the course of labor. Several years ago (3) I began the use of glucose, given as an enema, more or less routinely with the idea of avoiding the exhaustion and the inertia incident thereto. The results were extremely satisfactory, and the first stage was materially shortened, and the patients finished their labor in excellent condition.

I have a great number of hysterograms which were obtained from patients while a five per cent. glucose solution was being administered per rectum and in no case has there been abnormal contractions of the womb. Fig. 2 is a typical example of such contractions. Opportunity of showing graphically the action of glucose upon an exhausted uterus only recently presented itself. Fig. 1 is a hysterogram obtained from a patient with hyperemesis gravidarum. She had lost considerable weight when she entered the hospital. Her pulse was constantly above

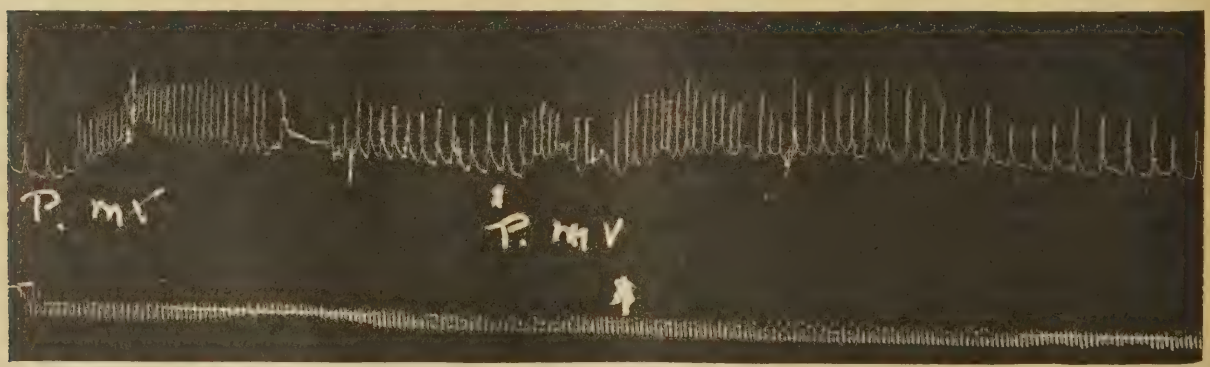

FIG. 1.—Hysterogram of patient in fourth month of pregnancy. 5 m. pituitrin were given at points indicated, and a proctoclysis with five per cent. glucose solution was started at point indicated. The first dose of pituitrin caused a characteristic pituitrin effect. The contractions followed one another without pause so that the intrauterine pressure was increased. The second dose of pituitrin had only slight effect on account of exhaustion. The glucose quickly restored the uterus and brought out the pituitary effect. The timer marks minutes and also indicates the base line.

110. The patient vomited everything and at times the vomitus was blood stained. She had gone past the stage of cooperation and there was nothing to do but to abort her. Under ethylene anesthesia the cervix was dilated with a Goodell's dilator sufficiently to introduce a uterine bougie. Patient had good pains for thirty-six hours until she expelled the bougie. The pains then stopped. The patient was given one quarter gr. morphine and a number 3 Voorhees bag was slipped in the cervix. The bag was inflated with lysol solution and the stem of the bag was connected with a mercury manometer so as to obtain a hysterogram. The patient was pretty well exhausted from the previous pains and under the influence of the morphine she slept most of the time the record was being made. She showed no evidence of any pain and when questioned, she said her back hurt a little. You can readily see that the uterus contracted slightly at regular intervals. Eight minutes after five minims of pituitrin were given the uterus went into an incomplete tetanus, typical in character but not violent enough to disturb the patient. Eighty-seven minutes afterwards the pituitrin was repeated. The uterus started to respond as before, but was exhausted. A proctoclysis with five per cent. glucose solution was started at the point indicated and quickly restored the uterus and brought out the pituitary action. The remarkable thing is the rapidity with which the uterus was restored.

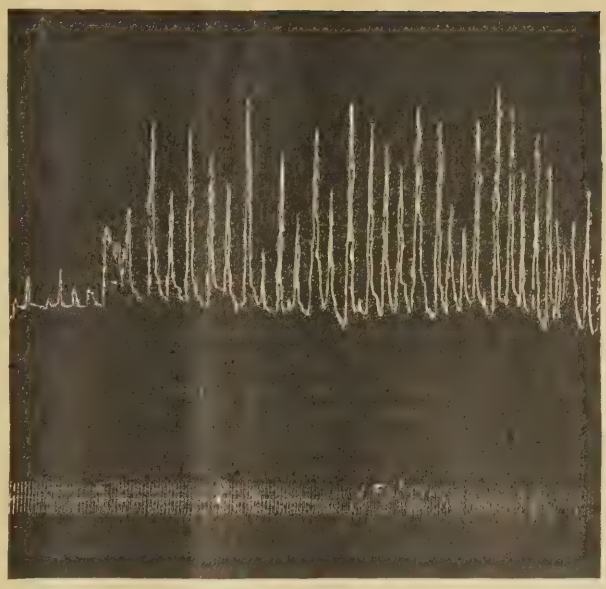

Fig. 2.—Hysterogram of patient at term. This patient had been given ¼ gr. morphine and 1/100 gr. hyoscin before the bag was placed. At a point near the left border a proctoclysis with a five per cent. glucose solution was started. While the contractions increased in strength and somewhat in rapidity there is a period of rest between each pain so that the intrauterine pressure between contractions is unchanged. The timer marks minutes, as well as the base line.

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The Importance of the Previous Labors in the Obstetrical History

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There are few instances in medicine where the previous history of the patient has no bearing on the complaint. Always of significance, however, except in the acute accidents of practice, the experiences of the former labors in obstetrics are of tremendous value in the decision of the outcome of subsequent confinements. This paper is written because we are constantly seeing cases at the Lying-in Hospital where such factors are decisive, and where disregard of them has led to fetal or neonatal death. There are qutie obviously two aspects of the subject, namely: first, where the previous labor has been abnormal, and secondly, where the previous labor has been normal.

Consideration of the first of these problems is the simpler. Here, a multipara gives a history of labor terminated by an instrumental delivery; or, a prolonged travail, with either a resulting stillbirth, or a baby in whom some serious injury has occurred. This should, if properly analyzed, indicate a disproportion between the baby and the mother, and in the presence of a normal sized fetus, quite naturally, a contracted pelvis of some type.

Such a history when repeated in several pregnancies should render this diagnosis positive and make the attendant take heed of abnormalities. It is not too much to say that with the history of repeated stillbirths and prolonged labor, a Cæsarean operation is justifiable, even though no contraction of the pelvis be made out. The history when indicative of the successful instrumental termination of the delivery by the natural passages, is of great influence in the present labor; one can then assume that the present birth may be accomplished in the same way. Although unfortunately, this is not always true, there is no other criterion that can be used except in the presence of an oversize or overterm fetus, where that can be recognized.

The following three cases taken at random from a number of such occurring constantly at the hospital will serve to illustrate these points.

Case I.—Para iii, generally contracted flat pelvis with diagonal conjugate of nine cm. and a true conjugate of 7.5 cm. When first seen patient was advised of the probability of Cæsarean section. Delivery was made by internal podalic version. The second pregnancy was terminated by a high forceps. The third and last was a spontaneous delivery.

Case II.—Para iii, with a flat pelvis with a diagonal conjugate nine cm. and a true conjugate 7.5 cm. The first delivery was a stillbirth spontaneously born; the second was a high forceps delivery. The third and present was complicated by a polyhydraminos with about six quarts of fluid, which was thought to be the factor in delaying engagement. The delivery was successfully accomplished by an internal podalic version of a nine pound baby.

On the other hand, as illustrating the unfortunate outcome which can occur, the third case will demonstrate the question of judgment or lack of it.

Case III.—Para iii, with a flat pelvis, and a diagonal conjugate of 9.5 cm. and a true conjugate of 7.5 cm. The two previous labors had been terminated by the vaginal route; it was felt that such an outcome would be the case now. An internal podalic version was done and it was necessary to perforate the aftercoming head to complete the delivery.

The other aspect of the problem is a much more difficult one. Here, we have a multipara in whom the history is of labors terminated spontaneously. With the present labor there is apparently some difficulty; if a vertex presentation, there is nonengagement, or there is some abnormal presentation. One does not feel justified in advocating a Cæsarean section in such cases and yet not infrequently a forceps is attempted or a version is done only to get a stillbirth or a baby badly injured. Such cases do occur, and after the delivery has been accomplished the obstetrician feels that interference by the abdominal route would have been less traumatizing to the mother and infinitely more gentle to the baby. These are the hardest cases to decide, and yet, in a measure, we can be guided by certain factors in reaching a conclusion as to the method of delivery. If nonengagement occurs in a multipara with active contractions where there is no pendulous abdomen and the membranes are ruptured some abnormality on the part of the fetus should be suspected. If it can be decided there is no hydrocephalus, or fetal monstrosity, then it is fair to assume a large or nonmoldable head. Then, the question will be one of version, high forceps or Cæsarean; the greatest discernment in deciding which one of these three to resort to will never give one hundred per cent. of good results, but it should be our effort to approach this. Of course, consideration must be given in the decision to the dangers of each of the procedures, both to the mother and to the baby. With proper precautions, even the Cæsarean in an elderly multipara will have its indication.

SUMMARY

1. The history of the previous labors is of importance in the obstetrical case.

2. Repeated stillbirths with prolonged labor should warrant the consideration of Cæsarean section.

3. Repeated deliveries by the natural passages will warrant the assumption, usually, of subsequent deliveries by the same route.

4. Occasionally, a patient with a history of previous deliveries by the natural passages will, because of a large baby, require Cæsarean section.

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The Toxemias of Pregnancy from Their Clinical and Chemical Aspects.—A. Louise McIlroy and E. Pilman Williams, in a paper read at a meeting of the Obstetrical and Gynecological Congress, London, in April, 1925, present a summary of researches regarding the toxemias of pregnancy covering a period of over three years and including the clinical and chemical examination of 172 cases. In order to complete the research seventy cases of normal pregnancy were also examined and used as controls. Also the blood and urine analyses were made in sixty additional cases of labor.

The researches show the advantages of antenatal work, and the authors make the statement that toxemia in many instances is caused by conditions which can be prevented and which have been present previous to the onset of pregnancy. The chief source is intestinal stasis. The unhealthy condition is intensified by the addition of the ovum with its toxins and the additional strain upon the excretory organs.

The classification of toxemias under a dominant symptom or group of symptoms has its disadvantages. The main point is the degree of severity of the toxemia. The clinical findings are identical in the majority of cases whatever the symptoms may be. The terms preeclampsia and eclampsia are merely used to designate the severer forms of toxemia in pregnancy. The authors plead for a broader view of the subject with less symptomatic classification.

From the chemical examinations carried out by Dr. E. P. Williams very little differentiation can be made between the various types of toxemia, but it is possible to distinguish these cases from those of nephritis. This is of value from the point of view of prognosis, as it helps the physician to come to a decision as to the desirability of interrupting the pregnancy. In serious nephritis it is advisable to allow the pregnancy to proceed and save the child if possible. A subsequent pregnancy should be avoided. In a toxic case the wellbeing of the mother should receive the first consideration in view of the fact that even if abortion were induced she would probably have a future normal pregnancy.

Quantitative urinary values have been of little help except in cases of persistent vomiting when high diastatic values were found. These were not found in any of the cases of high blood pressure.

In 172 cases of toxemia chemically investigated and treated, only one patient developed eclampsia, and the diagnosis in this case was doubtful, as the symptoms recurred in two subsequent pregnancies. There was only one death and that from cerebral hemorrhage in a patient with high blood pressure.

The authors do not advocate the induction of abortion unless all other methods of treatment fail. Induction of abortion was performed in only three cases of toxemia, one for pyelitis where one kidney had previously been removed, one for placenta prævia and one for novarsenobillon poisoning. The treatment of the severer types of toxemia is rest in bed and isolation from home affairs. Fresh air, very restricted diet and plenty of water. Colon lavage is of value. Drugs are seldom required. Elaborate charts were prepared showing the urea and nonprotein nitrogen content of the blood in the various conditions of toxemia.

Historical Medicine

The Origin and Early Rise of Pharmacy

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Like medicine and other sciences, the origin of pharmacy was in Egypt, and from here becoming expanded into other countries, it underwent successive changes and improvements which, in the distant past, can be noted in the evolution of all branches of science. Regardless of the use of drugs devoid of any therapeutic action or studied without any method, in spite of the very gross formularies, the details of which frequently escape our understanding, likewise the superstition and intervention of the supernatural which in those days only too commonly formed the basis of the medical sciences, the ancient Egyptians unquestionably made great strides in the progress of the healing art and that of pharmacy. In these matters their knowledge was far in advance of their neighbors, their contemporaries, or even that of the peoples of the Occident in the fourteenth century. Their notions in respect to the properties and the manipulations of medicaments were the result of very judicious observation.

It should be noted that at this early period pharmacy constituted a branch of medicine, and was an inseparable corollary. Some physicians gave themselves up to its especial study, attempting to develop it and render it independent. With the advent of Islamic medicine, the learned of the time studied the new properties acquired by the combination of various bodies, but superstition and love of the marvellous resulted in the creation of alchemy, from which modern chemistry was to be born with the arrival of Lavoisier.

The unearthing of several medical papyri has resulted in throwing much light on our subject. From these ancient writings it would seem that Egyptian medicine has a divine origin. Thot—the Hermes Trismegistos of the Greeks—may share with the healing god I-em-Hetep the title of Egyptian Asklepios. The time when Thot lived is conjectural but it is supposed that I-em-Hetep flourished in 3500 B. C.

To Thot is due the composition of the oldest book which was incorporated in the Hermetic collection. This collection, according to Clement of Alexandria, formed a sort of official and religious encyclopedia, composed of forty-two volumes or chapters, the last six of which comprised the medical sciences. They bore the following titles: 1, *The Constitution of the Human Body;* 2, *On Diseases;* 3, *On the Organs;* 4, *On Medicaments;* 5, *On Diseases of the Eye;* 6, *On Diseases of Women.*

Next to the deities, it is supposed that the Pharaohs of the early dynasties gave themselves up to the study of medicine. Teti, son of Menes, has been regarded as the author of a work on anatomy, while Tosorthos, a king of the third dynasty, contributed a textbook on medicine.

And lastly, the physician-pharmacists belonged to the class of priests and were divided into several categories of practitioners. The *pastophore,* whose social status is not quite clear; the *physician* in the strict sense of the term, who had graduated from a sacerdotal school; the *priests of the Goddess Sekhet,* who, according to Maspéro, were merely bonesetters; and lastly, *the exorcists,* who treated disease by magic words, charms and amulets. Besides these practitioners who cared for disease in general, there existed popular physicians—charlatans or empirical practitioners—such as we have today and which will persist forever. Among these ancient empirics, some treated hemorrhoids, others fractures, and so on. The physician-pharmacist, strictly speaking, is called *sonoro* in Egyptian, *colim* in the Copt tongue, and in Arabian *saïm,* which signifies "preserver," that is to say, he who preserves the body against all diseases.

The *Ebers Papyrus* mentions six formulæ prepared by the following deities: Ra, Show, *Tefrout,* Seb, Nout and Isis. Ra prepared the following ointment for himself:

Honey cooked on the fire	equal parts
Wax	
Chips of the turpentine tree	
Linseed	
Onion	
Cooked raisins	
Cypress seeds	
Castor oil plant seeds (?)	
Lettuce	
Poppy	
Turpentine resin	
Coriander seeds	
Chips of juniper tree	
Fresh sage	

Mix and apply over all diseased parts, against sacred diseases, all lethal diseases and in all kinds of swelling wherever situated.

Here is the receipt composed by Isis for Ra himself, and is sovereign against all ills of the head:

Coriander seeds	equal parts
Poppy seeds	
Sunflower seeds	
Juniper	
Honey	

First mix all the ingredients together, then mix them with the honey and apply.

The remaining thirty-six volumes of the Hermetic Collection comprised the entire Egyptian philosophy and only the priesthood was initiated into the mysteries contained therein, while the practice of medicine was in the hands of the high and low castes of priests. The high caste cured by exorcisms and with the help of demons; they frequently reinforced the effect of the medication by conjuration of the thirty-six demons and by the influence of the stars. The remedies were prepared and compounded by the lower caste priests, who were held in lesser esteem than the high class charlatans.

The medicaments were frequently designated by symbolic names. Thus, ivy was called "the plant of Osiris;" virvain, "the tear of Isis;" a species of

mugwort was known as "the heart of Bubastis," etc. All these names were retained by the alchemists of the Middle Ages, who were wont to surround their doings with an air of mystery. According to Diadorus Siculus, the pastophores were compelled to submit themselves to the written laws; as to the secondary priests they were, according to the same writer, in possession of extensive pharmaceutical knowledge.

The first Greek communications concerning Egyptian pharmacy date from the year 650 B. C., under the reign of Psammetic, hence several thousand years after the beginning, or even the apogee of Egyptian civilization. It was only after the colonization of Lower Egypt that relations with other peoples began, first of all with the Phoenicians. In the *Ebers Papyrus* it is stated that Khoui or Xin, the priest of Râ, was pharmacist in the city of Heliopolis and that he had compounded a special ointment for the eyes. The formula is given but it may be omitted here. This clearly shows that at Heliopolis at least, priest-pharmacists prepared compound medicaments to which they gave their name. Therefore the origin of pharmaceutical specialties may be said to date from this remote epoch of the world's history.

As the practice of pharmacy was carried on by the priests whose dignity was hereditary, it was in their interest to keep their work secret and to make it as difficult as possible for foreigners to have access to their knowledge. Although Haeser supposes that pharmacy and medicine were taught in special schools, I would point out that Diodorus Siculus tells us that not only the lower caste priests practised both medicine and pharmacy, but that there were also learned civilians paid by the state who gratuitously treated travellers and injured warriors.

The aptitude and science of the profession is not only made evident by the complicated preparation of incenses, but in the embalming of bodies as well.

The Berlin *Papyrus* is much like the Ebers. Both documents mention over 700 drugs, but there are few of them which one can identify with certainty. The best known and the most employed are the following: Milk (*artet*) of women, goats, asses and cows; urine (*muit fatit*) of men and women; the excrements (*sau*) of dogs, lions, crocodiles; bile (*as*) of the ox; brain (*udd*) of man; fat (*mereth*) and blood of various animals. Use was made of birds, beetles, turtles and lizards, without forgetting the honey of wild and tame bees. The salt (*hemat*) obtained near Memphis by evaporation of the water was held in high esteem for both internal and external affections. Potassium nitrate was well known, and as it was often adulterated with lime, its quality was estimated according to its taste and solubility.

Both the Ebers and the Berlin *Papyrus* refer to the clay of the Nile, lapis lazuli, sulphur and its metallic compounds, ammonia obtained by burning camels' excrement, etc. The use of metals and their salts was not general, these documents referring only to copper, aluminium and antimony.

Drugs derived from the vegetable kingdom were especially used, but as I have already remarked, few of them have been identified with any degree of certainty. As a matter of curiosity a few that have been clearly identified, may be given here; acorns (*augt*), myrrh (*ausi*), pistacia terebinthus and lentiscus (*aru*), cuminum (*kesnen*), mandrake (*netem*), linum (*sara*), alium sepa and sativum (*uters*), cucumis melo (*sept*), plantago (*afouth*), sage (*anufi*), mint (*tis*), ruta (*eprintu*). Castor oil, conium, Indian hemp and various solanaceæ were known and used. It may also be supposed that the Egyptians were tributaries to India for a large number of drugs, especially aromatics.

That part of pharmacy which today we call galenical, was very complicated in ancient Egypt. Medicaments were exhibited in the form of potions (*necht*), decoctions and mixtures (*abecht*), pills (*pait*), powders (*heit*), boluses (*snat*), etc. For external use there were ointments and poultices (*ana* or *nechem*), plasters (*uret*), collyriums (*stem*), suppositories (*suat*), etc. The sacred numbers, seven and nine, were preferably employed for the weight and number of drugs entering into the composition of their pharmaceutical preparations.

From the formulæ which have come down to us it is evident that their prescriptions were written in a very vague manner, often without indicating the weights and measures or the technic of the preparation.

At the time of the Ptolemies, pharmaceutical science had made vast strides forward and became separated from medicine. Those who practised this art were called Rhizotomes. Manthias, the teacher of Heracleides of Tarentum, was celebrated in these days and has left a description of the more active medicaments in use at the time. Zenon of Tangara made pharmacy a special science. He invented many compound remedies, one of which called *diasticon* was especially prescribed in colic. Next in order came the learned men of the famous school of Alexandria, among them Appollonios Mus (30 B. C.), who wrote a book on the effects of drugs, especially of those he called *euphorista* and *antidota*. Andreas of Carystos is another celebrated personage. Among other things he recognized the adulteration of opium and composed several ointments for ocular affections.

With Heracleides of Tarentum, the preparation and study of the effects of drugs attained a high degree of perfection, and he likewise purged the then existing pharmacopœia of many worthless medications. In his writings he deals with the preparation and composition of medicaments, poisons and their antidotes. He was familiar with conium, opium and hyoscyamus, as well as certain drugs of India, and he says that there is no medicament that he has not personally tried.

Following these brilliant periods came a time of retrogression. The Christians of the early centuries were forced to neglect the medical sciences, obliged as they continually were to combat impious doctrines and to extend their own. As to the Copt monks, they collected the doctrines and writings pertaining to these sciences which they jealously preserved in their libraries, but they made no attempt to develop them further. On the contrary, they rather mutilated them by mixing ideas of superstition and Christianity with them, hence they were the guardians, but not continuers of ancient Egyptian knowledge. The further development of pharmacy was undertaken by the Islamic physicians, but before considering their work

in this direction, something must be said of the practice of pharmacy at Rome.

It must be pointed out that a scientific revolution began with Hippocrates; the writings of this great physician and those contained in the Hippocratic Collection really are the foundation of pharmacy, because the manner of preparing and the forms of medicaments employed today are copied from the procedures of the physician of Cos. The successors of this illustrious practitioner extended his doctrines; it is sufficient to recall what botany and zoology owe to Theophrastos (370-285 B. C.) and Aristotle (384-322 B. C.).

Then the empiricist sect appeared upon the scene and developed polypharmacy, the abuse of which went to extremes. Their doctrine was that since a given medicament is capable of succeeding in a simple case, two drugs combined will act more potently in an affection occupying two sites in the body, while a disease offering several distinct symptoms should be treated by several drugs each capable of acting upon each symptom, hence possessing complete efficiency. The principal representatives of this sect were Nicander of Colophon (185-135 B. C.), who composed two Greek poems relating to the action of animal poisons, and Andromachos, physician in ordinary to Nero and said to be the first Archiater. He composed the famous composition called *Theriaca,* which contained about 150 ingredients, which for centuries to come was to be regarded as the universal panacea. I would point out, however, that Theriaca was merely an imitation of the celebrated electuary of Mithridates, King of Pontus, the first inventor of compound antidotes.

Thus Italy derived medical science from captive Greece, because the arrival at Rome of Greek physicians, either as slaves or free men, resulted in the foundation of Roman medicine and pharmacy. The practice of these two arts was completely free, no previous study or examinations being required. Students followed the lectures of some preferred master with whom thew visited the sick and prepared medicines under his guidance. Briefly put, the teaching was purely practical and clinical. Some of the teaching must have been excellent, when one recalls such men as Dioscorides of Anzaba (40-90 A. D.), Pliny and Galen (130-200 A. D.).

Up to this period pharmacy, medicine and surgery had been combined in one profession by the Greeks. Some historians suppose that medicine became divided into three branches by the School of Alexandria, namely dietetics, or the art of curing disease by diet; surgery, or the art of healing by the hand, and *pharmaceutics,* or the art of healing by medicaments. However, this distinction was never well marked and even appears to have had a short lived existence, because at Rome it became effaced and only traces of it are to be found in the reign of Augustus. At this period some medical practitioners renounced compounding pharmaceutical preparations, leaving this to the care of others.

Women practised both medicine and pharmacy at Rome, where they enjoyed greater consideration than in Greece. They were mostly privileged slaves, superior by the nature of their functions to other slaves of the *familia,* as the following inscription, unearthed in 1825, shows: *"Metilia dona medica."* Truth compels us to admit that these lady doctors often took advantage of their knowledge of toxicology and impunity was frequently acquired, thanks to their profound knowledge of the science of poisons and their antidotes, for they could render either good or detestable services in a time when imperial corruption was rampant and poisonings frequent.

Thus was it that the slave Locusta received liberty and considerable riches as the price for the murder of Britannicus. Other practitioners, less dangerous, for example Pamphile and Meroë, manufactured beneficent love potions potent inasmuch as they put to sleep human pain, or marvellous ointments which could operate improbable metamorphoses, but which, it would seem, did not all have the same virtues. It is said that a young Roman, having heard that Pamphile could change herself into a bird, stole into her laboratory during her absence to abstract some one of her ointments, but unfortunately he mistook the pot and with the first application of the contents he was transformed into a beast of burden. The charm was broken only because he happily was able to graze upon some roses that by chance he came upon.

Pliny, who gave himself up to special study of plants possessing special magical virtues, states that roses when chewed conjured charms.

These simple beliefs would be interesting to study more in detail, although modern science has demonstrated the powerful hallucinating action of certain solanaceæ, such as nightshade, henbane, etc., the ingestion of which disturbs the mental functions to such an extent as to make the *charmed* person believe that he has been transformed into a beast. These remarks are made simply to show to what a high degree the pharmaceutical art and science of toxicology had attained in those remote days.

Pharmacy, which up to this period, had been enriched with more or less incongruous preparations in which all the ingredients of materia medica seem to have been combined, was soon to fall into the hands of mercenaries. The shops of the *pharmacopolæ* replaced those of the old masters and these merchants, abusing the credulity of the public, cynically deceived the people in respect of the quality and quantity of their products, just as occurs today. For this reason the sale of drugs was placed under the care of a governor; they were packed in packages upon which the name of the drug and the place of origin were inscribed and they were then deposited in the imperial storehouses and from these were delivered directly to merchants. Regardless of these precautions the avidity and rapacity of those who gave themselves up to medicinal medicine only increased and it may well be conjectured what might have become of this art in these indigenous hands, had not a new science appeared to inject new life into this decadent pharmacy. This reviving power was chemistry which was to be developed by Islamic physicians of whom we shall now speak.

The Islamic physicians gave a new impetus to the study of medicine and pharmacy. They compounded their own pharmaceutical preparations for use in their practice and for this reason pharmacy was not a distinct profession with them. There did exist a class of herborists who sold dried plants and

drugs directly to the public, but they did not prepare medicines, although they did sell all kinds of poisonous substances.

Among the learned Arabian physicians, some cultivated the study of pharmacy and with great success. It was they who invented the names of alcohol (*el-kohl*), syrup (*sharab*), camphor (*caphour*), opium (*afioun*), ether (*eter*), etc. At the time of the Caliphs the medical profession had composed a kind of pharmaceutical codex containing medicinal preparations sanctioned by the government, the compounding and sale of which were controlled by proper authorities. The most complet codex was published towards the end of the ninth century under the title of *Akrabas* or *Krabasines*. Another treatise on pharmacology appeared in the twelfth century, written by Abou-el-Hassan-Abdallah-ibu-Tamine, the ulema and physician to the Caliph of Baghdad. This work acquired great celebrity and was used as a guide in the preparation of compound medicaments. Authorized under the seal of the Caliphs as a Codex of Pharmacy this treatise also laid down the prices of each preparation.

Avenzoar, a physician and surgeon of the eleventh century, was particularly distinguished in the art of pharmacy. He invented a number of syrups, tinctures, elixirs and electuaries and his treatise clearly shows that he must have dipped deeply into the study of various drugs in order to discover their active principles and to extract them.

The Islamic physicians also made known several drugs derived from India, China and Persia, as well as from Central Africa, such as camphor, various gums and resins, and a large number of plants, roots, barks, etc.

At the time of the Caliphs a decided taste for alchemy was rampant and this science was applied to the manufacture of glass, dyes, enamels and to metallurgy. In Gerber's famous work which dates from the eighth century, there is question of corrosive sublimate, red precipitate, nitric acid and a number of other chemicals. At a later date, a number of Arabian writers—mostly physicians (*tabib*)—applied alchemy to pharmacy and therapeutics. Rhazes in his books, refers to borax, orpiment, realgar and the use of alcohol as an excipient and dissolvent of various pharmaceutical preparations. He also studied various compounds in which sulphur, iron, copper entered, as well as preparations having arsenic, mercury, antimony and zinc as bases.

The treatise on materia medica by Aben-Gulfith-el-Haoui gives an excellent idea of what medicine derived from the chemical operations outlined by Rhazes in his book.

After the twelfth century the Arabs ceased to progress; they even retrogressed in the sciences and arts that they had created and gradually returned to their primitive state. Finally their ignorance was such that even among the class of ulemas reading and writing were unknown.

After the decadence of Arabian culture, the progress in the art of pharmacy remained at a standstill until the year 1546, when the first edition of the *Dispensatorium* of Valerius Cordus was published, which was the foundation stone upon which modern pharmacy was to be built.

The Brave Soldier: An Operation for the Removal of a Fatty Tumor in the Year 1665

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Many accounts of amputations are extant but few details of operations for the removal of tumors, other than cancer of the breast, have come down to us from bygone ages. Haller, however, has preserved one in his great collection of *Surgical Theses*. It was recorded by Joan Sigismund Elsholz, of Berlin, on January 9, 1666, in the following words:

"Michael Nebel, a Captain in the foot guards (*decurio de legione praetoriana pedestri*) of his serene highness our Elector, consulted me in the autumn of the year 1665. He said that six years ago he noticed a lump, no bigger than a pea, near the perinaeum on the border of the nates close to the anus.

"He had not taken advice because it caused no pain or trouble but it had increased in size until it extended to the front of the left groin. It had become so big in the course of the last month that the skin had first stretched and then given way and during the last few days it had grown still more rapidly. The patient, who was thirty-seven years of age, tall, thin and healthy, said further that the only inconvenience the swelling had caused him was formerly when he was a dragoon and had to ride, and he dated the beginning of the swelling from that time.

"The swelling felt hard and was so resilient on pressure that it seemed at first sight to be a sarcoma or fleshy tumor. He was advised to have it removed piecemeal as it might suppurate, but as he did not agree to this it was decided to remove it at one sitting. The operation was fixed for December 6th and the patient was ordered to be purged and bled in preparation for it. About eight o'clock in the morning Dr. Martin Weise junior and I as the physicians, with two surgeons were in attendance and when everything was ready the patient was laid upon the operating table (*scamnum*). He declined to be tied down as he thought it was unbecoming for a soldier, but nevertheless we had two lusty men who held his arms and legs. The tumor was first wrapped in lint on account of its slipperiness and its base was transfixed with a needle and thread from one side and then with a second needle and thread from the other side. The ligatures were tied tightly in case there might be severe bleeding. The whole mass was then cut away quickly with a sharp knife, and a dressing

soaked in white of egg and bole was applied at once to the wound. The leg was then bandaged and for greater security a bandage was put round the belly, and the patient who had borne the operation manfully (*et aegrotus qui mascule sectionem pertulerat*) was put back to bed.

"Twenty-four hours later the tighter bandages were removed and the others were loosened but the styptic dressing was left untouched. Appropriate remedies were given from time to time and the wound healed in a month.

"Examination of the tumor showed that it weighed two pounds and that it was shaped somewhat like a pouch for it was rather narrower at the base and at the apex. It was found on section to consist of a fatty substance so like fresh lard in color and consistence as to be indistinguishable. It had a covering membrane about as thick as a straw and thin membranes were distributed throughout the whole fatty mass in such a way as to divide it into lobules (*in cellulas*)."

There are several points of interest in this short account. In the first place, there is the brevity of the note which expresses the facts in such clear language that the exact nature of the case can be understood after the interval of two hundred and sixty years since it was written. Then there is the courage of the patient who decided that whatever had to be done should be done all at once and not piecemeal as his somewhat timid surgeons recommended, while he saved his professional honor by refusing to be tied up for "it was not becoming in a soldier to be bound."

The professional relation in which the surgeons stood to the physicians is also brought out for the two surgeons were clearly acting under the authority of the physicians. It will be remembered that at the same period in England it was ordered that "no surgeon be so bold as to trepan, or open the belly except in the presence and on the advice of a physician." In this instance the surgeons were dreading the loss of blood which might occur, no vain fear when the only means of arresting hemorrhage was by the application of styptics for there were no pressure forceps and the tenaculum for picking up the bleeding points had hardly come into use. Lastly, there is the careful examination of the tumor after removal which shows that it was an encapsuled lipoma. Appended to the report is a full page illustration.

Contributors to Medical Science

Hermann Boerhaave

Some three or four hundred years ago Holland was renowned not only for commercial supremacy but for the culture and learning of her citizens and the high position they took in art and science. Leyden was one of the most famous universities of the world, to which students from other countries flocked, as somewhat earlier they flocked to the Italian universities. Of all the graduates of Leyden few gained greater fame than Hermann Boerhaave, one of the most celebrated physicians of the eighteenth century.

Boerhaave was born in the village of Voorhout near Leyden on December 31, 1668. His father was a clergyman and a learned man, and his only son Hermann was destined for the Church and educated accordingly. At the age of fourteen he was sent to the public school at Leyden, where he showed remarkable ability, and at sixteen was admitted into the university. He studied under the best teachers of the day, logic, natural philosophy, metaphysics, ethics, rhetoric, chronology, geography, mathematics, Hebrew and Chaldee. He already knew Latin and Greek.

When twenty-one years of age, he delivered an academic oration and in 1690 he took a degree in philosophy. Hitherto his views had been directed to divinity but he was advised to join the study of physic to theology. So much did he like the study of medicine and so apt was he in acquiring knowledge therein, that he resolved to take a degree in physic before his ordination. He studied anatomy with great zeal but paid most attention to the works of Hippocrates because he found, from a perusal of the Greek medical authors, that after the "Father of Medicine" little novelty to be found. However, he did not wholly eschew the modern medical authors, in particular he esteemed the works of Sydenham. He made himself conversant with chemistry and botany and then went to the University of Harderwick, in Guelderland, where, in July, 1698, he took the degree of doctor in physic. At this time the union of medicine and priesthood was not common.

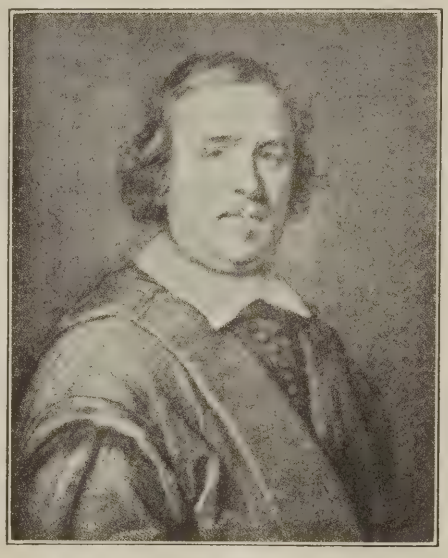
In old Egypt the union of physic and priesthood was a matter of course and up to the time of Hippocrates the practice of medicine was almost entirely engrossed by the priests. It was Hippocrates who first detached medicine from theology, or rather superstition, and raised it to a science. But this divorce was not lasting. In the twelfth century, under Pope Calistus II., the first Lateran Council, held in 1123, peremptorily forbade the interference of the clergy with the sick in any other way than as ministers of religion. The Council of Rheims in 1131 emphasized this ruling. These ordinances had so little effect that in the second Lateran Council in 1139, monks and canons were threatened with severe penalties for neglecting their religious duties, and applying to medicine as a means for "obtaining ungodly lucre."

As a matter of fact in later times, throughout Europe, and in France in particular, the duties of the physician were performed chiefly by ecclesiastics. In those times clerks and monks were the only members of the community given to study, and somewhat naturally they alone were deemed capable of

treating diseases. It will be remembered that the immortal Rabelais was both monk and physician, while among abbés, canons, bishops and so on, who filled this dual position to their rulers and patrons, may be enumerated, Fulbert, Bishop of Chartres; Lombard, Bishop of Paris; Roger of Provence, physician to Louis VIII.; Robert Donay, a prebendary and physician to Margaret of Provence; Oblizo, abbot of St. Victor, physician to Louis the Big; Rigord, a monk of St. Denis, and author of Philip Augustus.

Cabanis contended that the medical and priestly professions had many features of resemblance, that both brought into action the same motive principles, hope and fear, that medicine, like superstition, unquestionably exerted on the minds of men an influence in proportion to their weakness, and as the former acted upon more real and palpable objects than the latter, it followed that the most rational and enlightened men could never resist its power.

After this digression to return to Boerhaave. Subsequent to taking the degree of doctor of physic at first his practice was very limited, but in 1701, by the interest of friends, he commenced a series of lectures on the institutes of physic and so successful were these that he was requested to teach chemistry in addition. About this time he appears to have first publicly argued for the use of mechanical reasoning in physic.



HERMANN BOERHAAVE
(From Garrison's *History of Medicine*)

Boerhaave, however, not only endeavored to explain the functions of the body in health, the phenomena of disease, their causes, symptoms, and even the action of medicines for their relief, according to laws of statics and hydraulics, but also by the operations of chemistry. And in this direction it may be said that Boerhaave displayed his originality of mind and perhaps his foresight, as it is believed by many now that in a thorough and correct understanding of biochemistry is to be found a solution of the cause of disease and that in the practical application of that knowledge is to be found the conquest of disease.

In 1709, Boerhaave succeeded to the chair of medicine and botany in the University of Leyden, and attempted to fix the science of medicine upon the basis of observation, experiment, and the inferences naturally deducible from such a method. His zest for the study of botany, manifested in the addition of plants connected with medicine, rendered it necessary to extend the botanical gardens of Leyden to twice their original dimensions; and such was the esteem felt for him and admiration for his labors that in 1714 he was placed at the head of the University, by receiving the appointment of Rector. In this year, too, he became professor of the practice of physic. He was further elected president of the Chirurgical College, at this period medicine and surgery being regarded as being indivisible.

In 1725 the Royal Academy of Sciences of Paris elected him into their body, and in 1730 he was admitted into the Royal Society of London. In 1737, he was attacked with difficulty in breathing; he had suffered from gout for many years, and described his disease in a letter addressed to Baron Bassand, physician to the Grand Duke of Etruria. He gave an account also of his case more in detail to Dr. Mortimer, secretary of the Royal Society; and speaks of his immoderate fatness, brought about by his inability to take exercise. He described all the symptoms of hydrothorax from which he died on September 23, 1738, being then nearly seventy years of age.

Boerhaave had a very extensive practice, being consulted by all sorts and conditions of people. All the distinguished persons who passed through Leyden visited him and the Czar Peter is reported to have lain all night in his pleasure barge, against Boerhaave's house so as to have the opportunity to converse with him for two hours on various points of learning the following morning before college time. Students from all quarters of the civilized globe came in large numbers to attend his lectures. He married at the age of forty-two and left to his only surviving daughter a fortune of two millions of florins. His library was sold by auction. It was rich in the best works of medical authors, and also in other departments of learning.

Boerhaave wrote several works, the best known of which was one in support of Malphigi on the structure of the glands, indeed the sweat glands are now known by the name of Boerhaave's glands. Another well known work was the *Elements of Chemistry*, an altogether excellent production and far in advance of any book on chemistry published previously. Boerhaave was a great botanist and, perhaps, on the whole shone more in his knowledge of botany than in any other branch of medicine. He wrote two books on botany. The great Swedish naturalist, Linné, admitted that Boerhaave had formed his genera plantarum in the most accurate manner, looking particularly to all the parts of frutification in the arrangement and describing them with a precision such as to render the plates almost unnecessary for illustration.

Boerhaave will go down to posterity as one of the great physicians of the world and may be regarded as a factor in lifting the medical profession out of the slough into which it had fallen. He was scientific, or attempted to be scientific, in an age when medicine was given over to superstitition, and a really learned man when most of the physicians of the time were veneered with superficial knowledge, as depicted in Molière's *Médécin malgré lui* and relied for practice on their ability to humbug the even more ignorant public. In the time of Boer-

haave medicine in Europe was on a more scientific basis than in Great Britain, and the medical profession was more highly esteemed, and men of Boerhaave's stamp were responsible for its advance in all parts of the world and for its present high position.

Hippocrates: a Medicohistorical Note on the Howard A. Kelly Collection.—Dr. John Rathbone Oliver writes (*Bulletin of the Johns Hopkins Hospital*, September, 1925) that the gift of Dr. Kelly to the library of the Johns Hopkins Hospital is an important event in the hospital's history. The collection has not yet been catalogued, but has been arranged in an approximately chronological order, so an idea may be given of its contents. "Inasmuch as my own studies," writes the author, "have for some time past been centered about the Hippocratic Corpus, I can, it seems to me, offer my thanks to Dr. Kelly in no better way than by sketching some of the problems that are connected with the name of Hippocrates and by showing what help in solving them is afforded to a scholar by the books that, thanks to Dr. Kelly, we are able to consult here in Baltimore without being forced to wander far afield to other libraries and collections. . . . Like all collections that have been gathered together during a long period of years, and without any very definite guiding plan, the Kelly Collection is not all on the same level of excellence and completeness. It has its bare spots, just as it has its spots of richness—at times, almost of plethora. After the well filled shelves of Hippocrates, there is a gap between Hippocrates and Galen. One searches in vain for Aretæus, Rufus of Ephesus, and especially for Dioscorides. Later on in the sixth century Aetius and Alexander of Tralles . . . are missing. But these are details. . . ."

Dr. Oliver then sketches the Hippocratic problem by touching on four main topics—the Hippocratic problem itself, the Hippocratic Corpus, or collection of Greek medical books included under that general title, the manuscript tradition on which the oldest printed editions of Hippocrates are based, and, lastly, these editions themselves. The first topic, that of the Hippocratic problem, may be summarized by the statement that of this wonderful personality that dominated medicine from the fourth century B.C. until less than a century ago, we know practically nothing about his life, character or methods of teaching; and of the books bearing his name, there is scarcely one that has not, at one time or another, been rejected by scholars and editors as manifestly unauthentic. To take up, then, the second topic—what is this collection of some sixty medical books that we call the Hippocratic Corpus? "In the first place, it is a very wonderful collection indeed. There is scarcely any domain of modern medicine which it does not touch at some point or other. The surgical books are marvels of accurate observation and technical skill. . . . Manifestly, it is not all the work of one man. Study the books critically and you will see at once that they do not all even represent the teaching of the same school of medical thought. . . . Modern scholars are fairly in accord in believing that our Hippocratic Corpus represents the remains of a medical library, the medical library of the great medical school at Cos." The author goes on to describe the survival of the Hippocratic Books through the conquest of Greece by the Romans, the burning of the Alexandrian library, and during the centuries of the Middle Ages, when the monks were the chief practitioners of medicine. This brings us to the third problem—that of the manuscripts. The four most important of these belong to the tenth and eleventh centuries. These are *Theta*, or *Vindobonensis med. IV*, in Vienna, our oldest codex; *Parisinus 2253* or *A* in the Bibliothèque Nationale in Paris; *Parisinus 446, Supp.* or *C*, also in Paris; and *Laurentianus 74.7* in the Laurentian Library in Florence. Another important manuscript is in the Vatican Library in Rome. The fourth period covers the printed work of Hippocrates, and brings us into touch with the Kelly Collection. Dr. Oliver outlines the history of these printed editions, from the earliest, which appeared in Rome in 1525, through some of the most famous modern editions, and comments upon the eagerness with which all scholars are looking forward to the appearance of the great *Corpus Medicorum Græcorum*, which will contain all the medical writings in Greek of which manuscripts are still extant. This Corpus has been undertaken by the two Academies of Science of Berlin and Copenhagen.

Probably the most popular of the works of Hippocrates was the *Book of Aphorisms*, opening with the famous sentence, *Ars longa, vita brevis est*, translated into every known language and used in some form by almost every poet and dramatist. The Kelly Collection contains whole shelves of editions of Aphorisms. "The most interesting perhaps is the edition of Leonhard Fuchs, Professor at Tubingen (1501-1566). He was suspected of being a Protestant or Lutheran, so in many copies of this edition his name is blocked out in ink, and several sentences in his Preface are scratched out." Next to the Aphorisms in popularity came Prognostic, a book that has been accepted as genuinely Hippocratic. Then the French physician, Duret (1527-1586), published a folio Commentary of "Coan Prenotions," one of the oldest treatises of the Corpus, probably pre-Hippocratic. In the Kelly Collection there are two beautiful copies of this folio.

Dr. Oliver closes his article with the expression of the wish that it may serve as a guide to those interested in the collection, and gives a cordial invitation to all such to climb up to the gallery on which the collection now stands, and to browse around in it, taking down one book after another.

Richard Bright on Medical Ethics.—"Many are the moral questions which will arise to you in your professional life, and for the solution of which you must turn to a strict code of ethics, not printed on the leaves of a book, but engraved upon the tablet of the mind. These questions will refer, not only to your patients, but to you, amongst yourselves, as fellow practitioners." He points out "that it would be no easy matter to enumerate the questions, or write out the code by which they could be answered. But it is satisfactory to know that a cultivated understanding, an upright mind, and a full determination to act on the golden rule . . . will either anticipate and prevent the emergency, or point out our line of duty when it arises."—R. T. Williamson's *English Physicians of the Past*.

Editorial Articles

DEVIL AND DEEP SEA

"There are many ills different from those of repletion, but no less dreadful, arising from deficiency of diet." So said Hippocrates, and so affirms the twentieth century physician. Just where the line between the one condition and the other is to be drawn is something which no one, ancient or modern, can quite say.

Doubtless the Father of Medicine had in mind only the matter of quantity, for in his day foods had not been so denatured and so sublimated as in our own time. There is plenty of evidence that there was deficiency in essentials, or, what may possibly affect the same damage, plethora of nonessentials among the old Greeks.

The matter of minerals and vitamines is uppermost at present, but we have not yet settled about the amount of protein. Chittenden said it should be thirty grams, and Voit, a hundred or so, and there is considerable difference. The former showed laboratory proof, the latter the evidence of common practice, though common practice is seldom the best practice. A certain proportion of fat has been set forth in certain dietaries, but the matter of quantity has never been taken up seriously, that is, laboratory-wise, and we do not know whether we are right in indulging in fifty or in a hundred and fifty grams.

As for starch and sugar, we are as far from exact knowledge, save that we are told we should not become too fat, and starch and sugar make for fat, and yet a certain amount of fat is believed to be desirable, though, as we rarely draw upon it for use, it would seem more as a protection against cold than for any other purpose.

With our more recent acquisition of knowledge of deficiency diseases other than starvation, we are the more piqued to know about the diseases of repletion other than obesity. It has been guessed that chronic rheumatism, rich man's gout, the stone, and forms of neuritis may be due to indiscretions on the side of excess in special foods, and wild and various have been the recommendations to patients regarding their food. On this score the rheumatic is a particularly confused witness. Withal we have doubtless been half at fault in forgetting that an excess of one food, as of sugar, might be the real cause of what we thought was too much of another, as of meat, too much of the former interfering with the handling by the body of what was not too much of the latter.

The whole dietetic atmosphere is full of shapes, but they are seen rather darkly as yet. However, it ought to take some time to dispel the fog of ignorance with regard to this business of eating which has hung over us from far beyond the time of Hippocrates—in fact, from the days of the beginning of cookery and the era when the looks and taste of food were considered paramount.

NEURASTHENIA

Because it cannot be percussed, auscultated or otherwise laid hands on physically, there are not a few clinicians who are of the opinion that a diagnosis of neurasthenia is but an expression of ignorance of the true cause of the condition of the patient exhibiting certain general symptoms. We are too much tied to organic disease and we lose many patients to other cults because we have little patience with the feelings of patients. All feelings of dis-ease are signs of disease, physical or mental. It is fortunate that there are such signs and he is fortunate who gives due consideration to them, even if the person who has lost his ease is still able to be about and shows no perceptible evidence of cellular degeneration.

Dr. Frederic Peterson, in his address as president of the American Neurological Association, has called attention to the reality of this disease, to its frequency and to the fact that the study of its origins has been very much neglected. He states that cases of neurasthenia form at least one third of the clientêle of the neurologist (in his own experience thirty-eight per cent.) and yet the neurological literature on the subject is very meagre indeed.

He calls attention to the results of McCollum's experiments in which all degrees of nervous excitation and evidence of anxiety were brought about in animals by deficiency diets and he is confident that the same cause is often a factor in the production of nervous exhaustion in humans. He is certainly not wrong in saying that "there is good reason to believe that not only all children but all adults suffer from some degree of dietetic error" and we know well enough that many suffer to a very high degree.

He recalls the success of Weir Mitchell with these cases and believes it was the diet of butter and milk and codliver oil, etc., which had as much to do with his success as anything else.

He deplores our diabolic ingenuity in denaturing foods and our silly profligacy in feeding to the hogs the elements most essential to our own welfare, and he goes on to remark that the vast and growing con-

sumption of candy and soda water will shortly need a twentieth century amendment to the constitution on the ground that "in the long run and on a wider scale they are more destructive than alcohol."

In some sickness statistics which have come to the attention of the writer it is interesting to find that neurasthenia is relatively infrequent among industrial workers as compared with clerical workers and teachers. It is evident that those who handle things are less subject to nervous wear and tear than those who come more in contact with people. The industrial worker is also less tied to his job and can more readily tell his employer to go to the other place if he is not well treated. Possibly, also, a more severe use of the eyes adds a final straw to the back of the camel already weakened by deficient diet and by excessive burdens of one sort or another. Among the teachers of Victoria, Australia, the percentage of sick leave due to neurasthenia advanced among men from 10.67 per cent. in 1914 to 16.65 per cent. in 1920, and among women from 15.56 per cent. to 19.20, which is but another illustration of the blessings of war.

The duration of neurasthenia makes it a condition more than "doubly" serious, for whereas the case of influenza or tonsillitis runs a week or ten days, that of nervous prostration lasts a month or more and full recovery is always in doubt.

THE DOCTOR AS A BUTT OF THE SATIRIST

The medical man has ever been the butt of the satirist and it must be said that there was a time when he fully deserved the arrows of satire which were aimed at him.

In the wide times of Elizabeth and a little later when pedants abounded the doctor was conspicuous for the assumption of knowledge which he did not possess, and overawed his patients and at the same time covered his own ignorance by the use of technical and high sounding terms. Ben Jonson satirizing the pedantic fashion of the age sets up the doctor as one of the objects of his shafts. In the *Staple of News* he makes a character, one honest Pennyboy Canter the disguised father, to speak his bitter views on the "canting" prevalent among poets, strategists, astrologers and the rest. His son spurs him on with a challenge, "On to thy proof; whom prove you the next canter? and the poet retorts:

> The doctor here: I will proceed with the learned—
> When he discourseth of dissection,
> On any point of anatomy; that he tells you
> Of vena cava, and of vena porta,
> The meseraics and the mesenterium.
> What does he else but cant?
> Do I despise a learn'd physician
> In calling him the unconscionable Dr. Almanac, "a Quack salver?"

It should be remembered that in the language of the day "anatomy" signified not only a "dissection," on a "dissected body," but also a skeleton of all those who satirized the medical profession in pungent verse or prose none bit deeper or excoriated more painfully than Molière in his immortal *Le Médecin Malgré lui* or Le Sage in *Gil Blas*.

There are, however, not lacking satirists of the profession at the present time. George Bernard Shaw never misses the opportunity of girding at physicians and surgeons. It was the other day only that he flouted the surgeons of England saying that many of them were so devoid of manipulative skill that they did not possess the dexterity to tie their own shoe laces properly. Perhaps it is well that there are satirists of the profession, failings held up to public ridicule are likely to be corrected quickly which is to the advantage of all concerned. But the doctor of the day can assuredly lay the flattering unction to his breast that in knowledge and skill he is a vast improvement on the pedant who flourished in the time of Ben Jonson or of Molière or of Le Sage.

A DISAPPEARING DISEASE

The medical practitioner of the older generation has lived to see the almost complete disappearance of yellow fever. Formerly the summer scourge of the southern states, it is now almost as extinct as the proverbial dodo, in spite of the fact that the insect vector of the disease continues to thrive in many localities in the South. A variety of conditions has served to bring this to pass, chiefly, the attack upon the disease in its residual foci of Central and South America and the change in the type of ships which ply between the United States and the seaports to the South.

It is interesting in this connection to take note of another disease which has disappeared from many parts of the world, although in India and China it still takes a terrific toll of human lives. At one time bubonic plague was the perpetual menace of the British Isles, where there are many records of the disease from A.D. 543 onward. For the three years, 1348-1350, there was an appalling mortality from plague and for the next three hundred years the disease smoldered with occasional epidemic outbreaks. The years 1603, 1625 and 1665 were marked by great plagues in the centres of population, particularly in London. Then came the Great Fire which destroyed practically all of the nonratproof buildings of the city, and when it was to be reerected the rebuilding act of 1666 required that all London houses be built of brick or stone. Since that day plague has ceased to be a practical hazard to the city of London, because in building fireproof buildings its citizens iso-

lated themselves from the houserat and hence from plague of which the rat is the carrier.

In less dramatic fashion, this principle of evicting the rodent from the home of man has been practised and always with beneficial results in the eradication and prevention of bubonic plague. Man has now learned that it is poor economy to erect buildings which are not fire and ratproof and in this age of concrete plague is becoming a rapidly disappearing disease. Of course there are other factors which have assisted. The improved economic condition of the human race and the concomitant desire for the luxury of cleanliness have combined to make man live in better, less flea ridden houses. More and more plague is being restricted to those portions of the world where people live in filth and squalor with the rat and his parasites, and the oncoming generation of medical men will find bubonic plague even a greater curiosity than it is today.

THERAPEUTIC EFFECTS OF LIGHT

Members of the medical profession are likely to be attacked occasionally by fads and obsessions. A drug leaps suddenly into fame, launched into favor by a well known physician, and is employed on a large scale, until its continued use reveals certain countervailing effects or is superseded by a therapeutic agent extolled by another leading light of the profession, when it sinks into comparative oblivion.

During recent years it has been mainly around diet that medical scientific discussion has raged. Not many years ago the caloric content of a diet was regarded as the criterion of its nutritive value and more recently the vitamines have held the field although they are being ousted, to some extent, by the mineral salts and, perhaps, by iodine in particular.

The value of sunlight and the ultraviolet rays are now being recognized as incomparable curative and remedial agents and are acclaimed by many as panaceas for almost all human ills. While it has been shown undoubtedly that the effects of light in the treatment of certain diseases are amazingly beneficial, and while granting that its deprivation from the health point of view is frequently disastrous, it yet appears that its curative and remedial virtues are being somewhat extravagantly exaggerated in some quarters. It has been stated that rickets is due to lack of light and unhygienic housing conditions and environment only and that diet plays no part or a very subsidiary part in its production. It is true that to diet was attributed formerly a too potent influence in bringing about rickets and some other conditions, but the pendulum now seems to be swinging too far in the other direction.

Sunlight is the great natural sterilizer, kills hurtful germs and is the greatest mental stimulant. Ultraviolet rays, in the absence of sunshine, have been employed with extraordinary good effects. But the question remains, has sunlight or the ultraviolet rays the wonderful healing and recuperative powers which have been ascribed to them? In the *Medical Press and Circular,* April 22, 1925, the subject is discussed logically in the editorial columns. It is asked how do the ultraviolet rays produce constitutional effects, such, for instance, as increasing the flow of milk in a mother or benefiting the rickety child? Is it the case, as has been suggested, that sunlight stimulates the formation of vitamine A? But with regard to sunlight, while vegetable organisms cannot produce chlorophyll and build up starch without it, animal organisms do not appear to be directly dependent upon it, at any rate, not upon the direct rays of the sun.

The case of birds and mammals is quoted in support of this argument. In birds the effects of sunlight are excluded with a few rare exceptions by their feathers, and in mammals, excepting only man and the pachyderms, light for the most part is as effectually screened from them by their hairy coat as from birds by their feathers. Moreover, the thick hides of the pachyderms exclude light as completely as the feathers and hairy coats of birds and other mammals.

Man, indeed, is the only naked animal and, perhaps, it is likely that it is because he adapted himself to conditions, and these conditions necessitated no protection as the life led by birds and the other mammals necessitated it. Nakedness in man is no doubt an adaptive feature. But although man is naked, special precautions have been taken to protect his tissues from the action of a powerful sun. Where the rays of the sun fall with extreme actinic power, the skin is marked by pigment, and the thickness of the pigment is in direct proportion to the proximity of the regions they inhabit to the equator, where the sun's rays are most intense. On the other hand, in colder climates, where man is closely encased in clothes, pigmentation is less marked, and in lands where sunshine is scanty, the inhabitants tend to be blond. There is this evidence that man has developed a pigmented skin for the express purpose of shutting out light from the tissues. Therefore it seems as if light is not only not essential for man to live in health, but except in moderate quantities is actually injurious, otherwise why should such careful precautions have been taken to protect his tissues from sunlight.

Again, it is not the people who inhabit those climes in which the sun exerts its power most fiercely who are the most healthy, vigorous and energetic physically and mentally. Long exposure to a climate such as this is enervating both to body and mind.

The race which inhabits the lands where the sun shines but little leads the world in vigor of body and mind. The problem is confusing.

A certain amount of sunlight is essential to health and sunlight and also ultraviolet rays are beneficial in certain diseases and conditions of ill health, but it has yet to be proved how the direct rays of the sun are beneficial to health and why the inhabitants of lands in the torrid zone are inferior physically and mentally to those of the temperate zone. It is difficult to comprehend how and why the ultraviolet rays exert a potent constitutional effect. The editor of the *Medical Press and Circular* puts the situation well when he says that he cannot doubt that the direct beneficial effect of sunshine upon the body is insignificant as compared with the benefits derived from fresh air in the open. No kind of life is so health-giving as life in the open air, it seems to matter little whether the sun shines or not.

INSECTS AND DISEASE

While insects are beneficial in some ways, on the other hand, they exact a large toll in life, in ill health and in damage to agriculture. Insects are the chief pests of tropical countries and one of the main reasons why the tropics are not being utilized more rapidly by the human race in general. Knowledge, however, as to the habits of insects is increasing and with such knowledge will come a more general adoption of preventive measures.

As Dr. E. P. Felt, State Entomologist of New York, points out in the *Scientific Monthly* for December, 1925, it is impossible to believe that under present conditions wholesale decimation may result from insect borne diseases. The black death of the middle ages occurred at a time when the louse was a universal domestic incident and dwelt with royalty and the peasant alike. Plague, which ravaged Europe in the old days and which flourishes still in the Far East, is essentially a disease of dirty environment. When it swept in death dealing epidemics through Europe, sanitary and hygienic conditions prevailed which are unbelievable to the present generation. Plague remains a menace in Asia because the conditions in the overcrowded countries of China and India are, generally speaking, filthy in a high degree.

During the world war the stage was set for tremendous outbreaks of certain epidemic diseases, typhus in particular, but knowing the cause of this disease enabled those responsible for the health of the armies to take effective steps to stop it or to check its course.

Early in the history of this country yellow fever incited terror. Now, on account of the application of known facts of its genesis, it is almost a negligible quantity. Yet it is more or less prevalent in some South American countries where the gospel of cleanliness is not thoroughly carried out.

Malaria is the most conspicuous example of a disease carried by insects, but it is only because money is lacking to provide adequate preventive measures that malaria continues to be such a potent cause of mortality and ill health.

Widespread epidemics of insect borne diseases have ceased to menace mankind, because medical men have learned that insects without the infection are practically harmless. The object aimed at in preventing the spread of diseases carried by insects, is to keep down the number of carriers to a minimum and to safeguard the remainder from infection. It may not be too optimistic to predict that the end of insect borne diseases is in sight.

Obituary.

SIR R. DOUGLAS POWELL, Bt., K.C.V.O.

London

Richard Douglas Powell was born near London on September 25, 1842. He was educated privately and at University College Hospital Medical School. He graduated with the degree of M.B. from London, and received the diploma of M.R.C.S. in 1865 and the degree with honors the following year.

In 1868 he became physician to the Brompton Hospital for Tuberculosis. In 1871 he was appointed assistant physician to Charing Cross Hospital, and in 1874 became full physician at the Brompton Hospital. In or about 1877 he left Charing Cross to become assistant physician to the Middlesex Hospital; in 1882 he became full physician and lecturer on the practice of medicine, and in 1900 on retiring from the active staff he was appointed consulting physician. At a comparatively early age he was appointed to the Court of Queen Victoria. He became a member of the Royal College of Physicians in 1867, a Fellow in 1873, was elected president in 1905, and reelected on four subsequent occasions. With Sir Thomas Barlow he attended Queen Victoria in her last illness. Dr. Powell was an authority on diseases of the lungs and heart and his many contributions to literature as well as two books, one of which ran through several editions dealt with these diseases.

He was the last of that distinguished band of physicians of which Sir William Jenner was the leader. Powell was of slight build, clean shaven and almost ascetic in appearance. He possessed the old world courtesy, was gentle and deliberate in speech and of great personal charm. He was as thorough in his written opinions as in his spoken word, and all the details of treatment were discussed by him most carefully. Sir Richard Douglas Powell was almost the last representative of the consulting physician of the old school, dignified, courteous, and quiet, a complete contrast to many of the new school.

Fig. 1.—Partial view of Baden Baden

Baden-Baden, the Queen of the Black Forest

ELSA DENHAM
New York

"The Garden of Eden of Central Europe," Baden-Baden has been called, and, in fact, in point of natural beauty it need fear no comparison with any other city in Europe.

This exquisite health resort, annually the meeting place of the fashionable élite from all parts of the world, is centrally situated on the main traffic railroad lines—Berlin—Italy—Vienna—Paris—and may be reached directly by express trains from all parts of Europe. One of the oldest resorts known, no one can say to what remote antiquity the origin of Baden-Baden belongs. History tells, and ruins confirm the tale, that Emperor Hadrian built a bath house here eighteen hundred years ago. But Baden-Baden has really only come into its own during the last couple of centuries.

It lies in the valley of the Oos, a little river which winds through gardens and by the streets, sparkling in tiny cascades over a pebbly bed. Above the valley that holds the town, tower the protective hills that keep harsh winds at bay.

THE CLIMATE

One of the special appeals of Baden-Baden lies in a climate, the mildness of which ensures a perennial season. Winter may rule over the surrounding forest but its sojourn in the valley of the Oos is the briefest; rough winds are barred and banned for all times by hills thousands of feet in height. In summer the heat is agreeably tempered by the shade of the woods, by the wind and air currents carried from the hill tops through the town, by the river, and the evening breezes that arrive infallibly when the sun sets. These hills at Baden-Baden are covered with tropical gardens, wonderful forests and giant trees, a delight to the eye at all times.

THE SPRINGS

The waters of Baden Baden have a long and remarkable record and have been the source of healing for upwards of two thousand years. About twenty springs have their source on the slopes of the Schlossberg. They are mostly alkaline, radioactive, saline, thermal springs.

The great Friedrichs Spring pours out one million quarts every twenty-four hours, and the water is said to come from a depth of six thousand feet. The temperature is very high, 154° F. and the water is rich in lithium and arsenic. The Buttensource is one of the strongest radium springs in Germany. The most interesting aspect of the Friedrichspring is that it provides a novelty in the way of baths that can be had nowhere else. This is known as the *Wildbad*. Given in a shallow marble basin on a sandy bed, which retains the heat, it is very effective in the treatment of both gout and rheumatism and finds a continuous stream of patrons throughout the year.

There are the usual baths to be had; Turkish baths on the most elaborate scale; Fango baths, with volcanic earth from the Eiffel mountains (near the Belgian border); and carbonic acid baths, made by the addition of carbonic acid to the mineral spring water.

Another specialty of Baden is the Zander treatment, the famous system of exercises invented by Dr. Zander, of Sweden. These treatments are given in several of the Baden bath establishments and the largest of them has as many as seventy-four different machines for the exercise of certain muscles indicated and prescribed by the physicians.

THE CURES

Baden-Baden offers exceptional facilities for cures in surroundings that cannot be surpassed. The treatments given are for gout and rheumatism, especially inflammatory, catarrhs of the respiratory organs, and for certain troubles of the heart and nerves.

Aside from the regular bath establishments, a number of hotels provide medical bathing facilities in their own establishments, either in separate baths or private bathrooms, directly connected with the rooms of the guests.

ACCOMMODATIONS

On one side of the Oos is a long range of stately hotels, and, surrounded by lovely private gardens, inns, villas, boarding and lodging houses to suit all purses and all demands are ready to accommodate the traveler with the best they have to offer, and proffer an unfailing welcome that constitutes one of the principal charms of Baden-Baden.

AMUSEMENTS

The town affords the visitor the most generous variety of amusements. One of its great traditions is in offering the best in music that may be provided. A large municipal orchestra is on duty for eleven months of the year. Many of the most famous musicians of the past have played and sung here and the artists of today deem it an honor to be called to perform at Baden-Baden. There are first class plays, operatic performances, light and serious lectures, dances and other entertainments. The Kurhaus boasts of several magnificent ballrooms and the demand for dances is met here and at all the hotels.

Only a small percentage of those who visit Baden-Baden come for the sake of the cure alone. The social life is ever in the ascendant. All classes merge in the pursuit of a holiday and indeed Baden-Baden offers opportunities that will compare with those of any other inland holiday resort.

SPORTS

Nine hard tennis courts, a clubhouse and an instructor are provided for the tennis devotees in the valley of the Oos.

The situation of the golf links is admirable; there is a clubhouse and an instructor, annual tournaments with valuable prizes, and the social life of the links and the country-club. A short distance from the town, towards Lichtenthal, are excellent riding grounds for early morning canters.

First class whips, on old time coaches, may be seen any day on the roads and drives, and the race course at Iffezheim is world famous. For more than seventy years the "sport of kings" has annually attracted the multitude of the cosmopolitan sporting world.

Baden and its surroundings are a paradise for the motorist. Well made roads in all directions lead to places of attraction.

To the north and the south the wide fastnesses

Fig. 2.—Portion of old castle

of the Black Forest lure the motorist to excursions, to Freiburg, the Titise St. Blasien; Restatt, Pforzheim and Karlsruhe. Rivers and lakes, waterfalls on steep mountainsides, afford kaleidoscopic views of beauty to the motoring traveler.

Every year there is an automobile tournament in

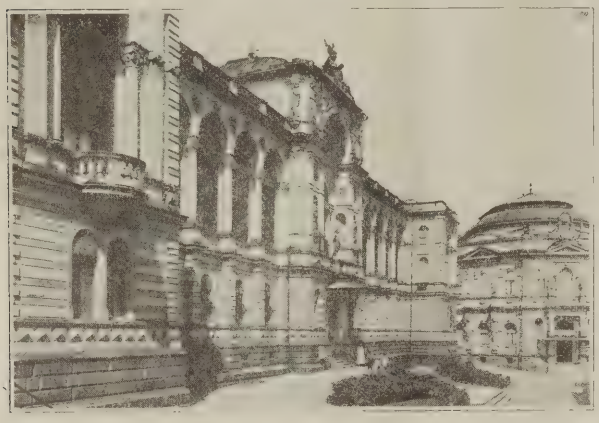


Fig. 3.—Friedrichsbad, with Augustabad in the background.

Baden-Baden and it has now become one of the most popular events of the season.

And last, but not least, there are the winter sports. The hills and the rivers, the lakes and the roads offer a variety of exhilarating exercise. From all parts of Europe and further, the lovers of winter sports assemble at Baden-Baden.

Thus, by its innumerable attractions, aside from its function as a health resort, Baden-Baden retains a firm hold upon a cosmopolitan gathering and maintains a reputation for social life that was established in the days of our great grandfathers and which will continue to grow from generation to generation.

News Items.

Shapleigh Memorial.—The St. Louis Medical Society has received from the family of the late Dr. John Blaisdel Shapleigh, the sum of $45,000 for a new auditorium, to be built as a memorial.

Research Endowment.—The National Academy of Sciences is raising an endowment fund of two million dollars to relieve scientists from teaching and permit them to devote their time to research in pure science. Dr. William H. Welch, of Johns Hopkins, is a member of the board of trustees.

Pneumonia Research.—Dr. William H. Park, of New York University, will direct a research endowed by ex-congressman Littauer, to be known as the Lucius N. Littauer Fund for Studies in the Prevention and Cure of Pneumonia. The endowment provides ten thousand dollars a year, and was presented through Dr. Jesse Bullowa.

Directory of Convalescent Homes.—A directory giving complete detailed information about convalescent homes serving New York City, has been prepared by the Hospital Information Bureau of the New York Academy of Medicine; a charge of twenty-five cents is made to private individuals for the directory.

Child Hygiene Exhibit.—An exhibition of modern hygiene and prophylaxis and the latest methods of applying gymnastics and developmental exercises for infancy and childhood, will open May 8th, at Dusseldorf, Germany, under direct supervision of Professor Dr. Schlossmann, of the University of Dusseldorf.

Hospital News.—The Passavant Hospital has been granted a ninety-nine year lease of space on the campus of Northwestern University, Chicago, on which it is to erect a new building, at a cost of one and a half million dollars. One third of the beds will be used for clinical instruction at the University.

The St. Luke's Hospital and the Children's Homeopathic are to merge. New Buildings with a capacity of three hundred and fifty beds will be erected at the present site of the Children's Hospital.

Gifts and Bequests.—The will of the late Gustav Ulbright provides $838,000 for the Lenox Hill Hospital, New York.

The will of the late Dr. Norman Bridge, of Chicago, divides his estate among the medical departments of the University of Chicago and the University of Southern California, the Barlow Sanatorium Association of Los Angeles, and two non-medical associations, each to receive about $1,200,000.

A gift of $250,000 has been received by the University of Pennsylvania from Mr. Martin Maloney of Philadelphia, as part of a fund to be raised for a new building for the University Hospital.

A gift of one hundred thousand dollars has been received by the Niles Hospital Association, Niles, Michigan, from Mr. and Mrs. F. J. Plym, for the purpose of buying and remodeling a building in the city for hospital use.

The University of Chicago has received a bequest of $600,000 from the estate of Miss Helen Culver, for the further development of biological science.

Personal.—Dr. Mark L. Fleming has been appointed general medical superintendent of Bellevue Hospital. Dr. Fleming has been connected with the hospital for twenty years.

Dr. Henry P. Carr, of the International Health Board, New York, will assist the Illinois Department of Health in the study of malaria in the rural districts of the state.

Dr. Robert Abrahams has been reappointed manager of the Manhattan State Hospital, for a seven years' term of service.

Dr. William Darrach, dean of the College of Physicians and Surgeons, has returned from a visit to the Columbia University School of Tropical Medicine in Porto Rico.

Dr. Herman G. Weiskotten has been appointed commissioner of health of Syracuse, New York, succeeding Dr. Thomas P. Farmer, who has resigned to enter private practice. Dr. Weiskotten is acting dean and professor of pathology of the Syracuse University College of Medicine.

Dr. William W. Keen, of Jefferson Medical College, Philadelphia, recently celebrated his eighty-ninth birthday.

Dr. Raymond P. Sullivan, of New York, has been honored by the insignia of a Chevalier of the Royal Crown of Italy, for his services to that country during the war.

Society News and Notes.

Among February meetings at the American Museum of Natural History will be those of the New York Microscopical Society on the 19th, the Section of Anthropology and Psychology of the New York Academy of Sciences on the 22d, and the American Ethnological Society on the same date.

* * *

On the evening of January 28th at the home of Dr. Jacques Maliniak, 258 Riverside Drive, several well known physicians of foreign birth met to discuss plans for forming an International Medical Association. Letters from physicians in or near New York who are interested in such an association will be gladly received.

* * *

The United States Veterans' Bureau Medical Officers' Society has elected the following officials to serve during 1926 in the New York City headquarters: Dr. F. M. Shockley, president; T. J. Ryan, vice-president; Dr. C. R. Brooke, secretary-treasurer.

* * *

The West Side Clinical Society of New York has elected the following officers for 1926: Dr. Jerome Kingsbury, president; Dr. George A. Schnepel, vice-president; Dr. George Stevenson, treasurer; Dr. William B. Giles, secretary.

* * *

The fifth lecture in the Harvey Society series was given on February 6th at the New York Academy of Medicine by Dr. Edwin Bidwell Wilson, professor of vital statistics at the Harvard School of Public Health. His subject was Empiricism and Rationalism.

* * *

The New York Röntgen Society met on February 8th at the New York Academy of Medicine. The speaker of the evening was Dr. Jacques Forestier, whose address was on the subject of Radiological Exploration with Iodized Oil.

* * *

In April, 1926, will be held a joint meeting of the American Statistical Association and the Vital Statistics Section of the American Public Health Association. The twentieth anniversary of the death of William Alexander King, first chief statistician of the vital statistics section of the Census Bureau, will be commemorated. Professor Willcox will address the meeting on the work of Dr. John Shaw Billings, which was closely related to that of Mr. King, and Mr. Van Buren, of the Metropolitan Life Insurance Company, will give personal reminiscences of the work of Mr. King in establishing the Registration Area and in planning for the adoption of the standard certificate of death in the several areas.

* * *

Dr. Foster Kennedy, attending physician of the Neurological Institute, New York, will lecture at the Academy of Medicine on the afternoon of Tuesday, February 23d, at four o'clock, on the Relation of Nervous Disorders to Functional Disease; on March 2d at the same place and at the same time, Dr. William A. White, of Washington, D. C., will speak on Psychological Methods of Cure.

The Malaria Commission of the League of Nations has recently issued its report covering observations and studies made during a tour in 1924 of many countries of Europe. In scope the report includes epidemiology, organization of antimalaria campaigns, measures adopted concerning man and those against the mosquito, the protection of houses, and the influence of animals, of improvements for the soil, and of population. The chief work of the commission was done in Italy and Southeastern Europe.

* * *

February meetings of interest are those of the Council on Medical Education and Hospitals of the American Medical Association in Chicago on the 15th to 17th; and the National Vocational Guidance Association in Washington, D. C., February 18th to 20th. On March 15th the Wyoming Public Health Association will meet in Cheyenne; the American Association of Pathologists and Bacteriologists will meet in Albany, April 2d and 3d; and the Western Physiotherapy Association in Kansas City, Mo., April 15th and 16th.

* * *

A members' meeting of the New York Microscopical Society at which various topics of interest were discussed was held at the American Museum of Natural History on February 8th.

* * *

An open meeting of the North Atlantic District of the American Association of Hospital Social Workers was held at the New York Academy of Medicine on February 3d. Hon. Louis I. Harris, Commissioner of Health of New York City, made the address of the evening.

* * *

The annual meeting of the American Social Hygiene Association was held on January 16th at the Hotel Pennsylvania, New York. More than two hundred members and delegates were present. Among the speakers were Dr. Louis I. Harris, Dr. Edward L. Keyes, professor of urology at the Carnell Medical School, and Dr. A. H. Desloges, general medical director for hospitals and other institutions of the Province of Quebec.

* * *

On February 3d H. Clyde Snook addressed the members of the New York Electrical Society on the subject of the stethoscope and other electrical devices developed by the Bell Telephone Laboratories for the aid of the medical profession.

* * *

The Community Health Council of the Bellevue-Yorkville Health Demonstration elected Dr. Louis I. Harris chairman at their meeting on January 14th. Other newly elected officers are Dr. John J. McGrath, first vice-chairman; Miss Lillian D. Wald, second vice-chairman; Miss Alta E. Dines, secretary; Dr. James Alexander Miller, chairman of the executive committee.

* * *

Prof. Henry Fairfield Osborn addressed the Section of Biology of the American Museum of Natural History on February 8th on the Problem of the Origin of Species as it was in 1859 compared with what it is in 1926. The lecture was illustrated with slides.

Book Reviews

THE HEART BEAT

The Mechanism and Graphic Registration of the Heart Beat. By Sir Thomas Lewis, M.D., F.R.S., F.R.C.P. Third Edition. London: Shaw & Sons, Ltd., 1925. Pp. 529.

This well known book, which needs no introduction to the discriminating student of medicine, is a monument to the life work of its author. First published fourteen years ago, it now appears in its third edition. The preface presents in masterful fashion the point of view which has underlain the scientific activities of Sir Thomas Lewis, and which has given him his high rank in medical science. A few quotations will reveal the character of the man and his work.

"The book was written originally in the hope that it might stimulate the study of heart affections by precise methods. Inexact method of observing, as I believe, is one flaw in clinical pathology today. Prematurity of conclusion is another and follows in part from the first, though in chief part an unusual craving and veneration for hypothesis, which besets the minds of most medical men is responsible. Hypothesis has its right place, it forms a working basis; but it is an acknowledged makeshift, and, as a final expression of opinion, it is an open confession either of failure or at the best of purpose unaccomplished. Hypothesis is the heart which no man with right purpose wears willingly upon his sleeve. I have been particular to set forth evidence upon evidence for a given conclusion in the book, feeling that no doctrine is sufficiently supported if yet another serious argument may be urged in its favor."

The book has been considerably rewritten and a number of new chapters have been added. Some of these are on the circulus movement in the genesis of auricular fibrillation and flutter, as well as of extrasystoles and paroxysmal tachycardia, on the membrane theory of electrical phenomena, and on the nature of heart block. There is no other book that presents in such lucid and complete form our present knowledge of the mechanism of the normal and abnormal heart beat, and in which the author's conclusions are so carefully supported by observation and experiment. Yet it is not only informative, but through emphasis on the limitations of our knowledge it is highly stimulating to the thoughtful reader. A bibliography of 1,003 references concludes the monograph. The volume is indispensable to every cardiologist and of the greatest interest to every practitioner of internal medicine.

REJUVENATION

Etude sur la Vieillesse et le Rajeunissement par la Greffe. Par Serge Voronoff. Paris: Gaston Doin, 1926.

The author, a well known pioneer in this new field of medicine, gives in the present small volume a summary of his work of the last years.

The introductory remarks are of general biological character and they show the author's earnest belief in the possibility of rejuvenation through transplantation. The main part of the treatise is taken up with the description of the various operations, their preliminaries, technic, immediate results and final clinical effects discovered after prolonged observations. The operations consisted chiefly of transplantations of ape testicles into men. He also has used sex glands of young animals for transplantation into old ones.

A short chapter is devoted to the prospects of rejuvenation of females by way of ovarian transplantation.

Voronoff's work as described in this volume compels us to respect the devotion and sincerity of the author. Although many of the theses and ideas set forth by him are in some ways still hypothetical and disputed, his efforts have doubtlessly done much toward overcoming prejudices against endocrinology in general and rejuvenation in particular and have helped to open and clear the road to further research.

A large number of excellent photographs, showing the various stages of the operations, as well as patients before and after the treatment, add much to the value of the book.

EARLY DIAGNOSIS OF TUBERCULOSIS

Frühdiagnose der Lungentuberkulose unter gleichzeitiger Berücksichtigung der Drüsen—und Lungensymptome. By Dr. Hans Alexander, Leitender Arzt des Sanatoriums Agra; 3rd Edition. Leipzig: Curt Kabitsch, 1925.

This is the third edition of Alexander's essay on the early diagnosis of tuberculosis. Prior to discussing the physical methods to determine the presence of tuberculosis in the lung, he emphasizes the fact that in taking the history, a primary infection and the whole physique of the patient with other intercurrent diseases, and his mode of life, must all be taken into consideration. Tachycardia, pain in the gastric region, anorexia, hyperhydrosis, loss of voice, easy tiring and anemia, besides cough and chest pains, he considers important symptoms in the diagnosis. He insists that the inspection of the chest should be made in good light and attention should be paid to the formation of the thorax, the presence of enlarged glands, etc. Measuring the chest circumference he considers of no value, nor does he believe the special palpation of the bronchial glands of particular importance. He elucidates the voice fremitus by the well known method of having the patient repeat in a deep voice the words *neun und neunzig* or *drei und dreizig.* The latter would hardly do of course if translated into English.

Pottenger's method of palpating for hypertonicity of the chest muscles, which the author calls "touch palpation," Alexander thinks does not differ from Epstein's *Tast Perkussion,* which had already been employed by Turban in lung percussion. He believes that this hypertonicity may be due to other causes besides being found over tuberculous lesions. Concerning percussion, nothing that is not already widely known is mentioned, but it is interestingly described. The author very wisely says that neither percussion nor auscultation can be learned from books and complicated instruments, such as phonendoscopes, etc., are not necessary for the normal ear. He insists that the best method of detecting auscultatory changes in the lung is the use of the monaural wooden stethoscope. He warns against

adventitious sounds produced by movements of the muscles, by pleuritic frictions, or by hair under the stethoscope. The importance of having the patient cough during examination he emphasizes by saying, "He who examines without having the patient cough commits an error in his art." He gives Turban's classification of the findings which may be obtained by auscultation. Like all careful diagnosticians, this author attaches the greatest importance to the temperature curve of the patient. He gives a short description of the quickest method of finding tubercle bacilli and enumerates the various tuberculin reactions without offering anything new. Concerning Wright's opsonic index method, he says that he believes it of value, but because of the difficult technic, it is impractical for the average physician. Concerning röntgen diagnosis he believes that while fluoroscopic examination may be helpful, only the actual photograph is of real value. He gives six interesting illustrations of various stages of pulmonary tuberculosis which will be of aid in the careful study of the interpretation of shadows produced by tuberculous invasion.

In spite of the whole work being comprised of only thirty-nine pages, of which four are devoted to the bibliography, this little booklet gives a good idea of what we ought to know about the early diagnosis of tuberculosis, and if the author would have devoted a little more space to the subject of differential diagnosis, the value of this contribution would have been greatly enhanced.

THE WRITING OF PRESCRIPTIONS

Prescription Notes. By Arthur L. Tatum, Ph.D., M.D. Chicago: The University of Chicago Press, 1925.

The author of this little booklet aims to teach correct Latin for prescription writing. I am afraid he will not succeed with those medical students who have not studied Latin, and unfortunately Latin is not now required as an entrance requisite by many medical schools.

The Latin suggested for prescriptions should be of the simplest. It would seem hardly worth while to change from the imperatives of *recipe, fac, signa,* and *pone* to the subjunctive *fiant,* which immediately confuses the grammatical construction. His criticism of *fac capsules* that the druggist does not make a capsule is perfectly true; but to be hypercritical we should not say under *signa,* "take one teaspoonful three times a day." It is more correctly stated, "take a teaspoonful three times a day."

Illustrative prescriptions should be distinctly useful, and it would seem very unusual to order "belladonna leaves"; a very rare use of belladonna. Also, when a soluble strychnine tablet can be ordered, the intensely bitter solution of strychnine sulphate in peppermint water would hardly seem satisfactory to the patient.

In the four rules for the computation of doses for children which are listed, the author apparently has not seen the simple rule offered in Osborne's *Principles of Therapeutics.*

The author's list of valuable preparations of the United States Pharmacopœia is excellent.

More than half the book consists of blank pages for the preservation of "selected prescriptions."

BIRTH CONTROL

The Morality of Birth Control. By Ettie A. Rout. London: John Lane, The Bodley Head, Limited. Pp. 224.

The Morality of Birth Control is not only a statement of the author's own feelings and opinions on the subject, but, and perhaps chiefly, a culling and weighing of the opinions of others who have written on the subject, and a statement of the facts as to the social influence and hygienic effects of the exercise of birth control and of its suppression.

"There is no period in human history," writes the author in her foreword, "when birth control measures have not been widely exercised, and there is abundant indication that prehistoric men and women habitually employed checks of various kinds. Only the uninformed will accept the claims of modern birthcontrollers to have 'discovered' something humanity was well aware of thousands and thousands of years ago; only the fraudulent will pretend that a practice which has survived so long is useless and dangerous; only the unintelligent will suppose that the knowledge of birth control now in the world can be taken out." This quotation summarizes the author's viewpoint in writing such a book and the chapters into which her discussion of the subject is divided ably support it. These chapters are entitled Reproduction, Race Improvement, Total Abstinance, Abortion, Unchastity, War, Ancient and Modern Birth Controls, Life Control, Death Control, Marriage, the Spread of Knowledge, Debate on Birth Control, and Conclusions. Appendices give French population statistics, quotations from an article on the Church and Married Love, by Lord Dawson of Penn, Birth Control Libel Action, and Emigration as an Alternative to Birth Control.

The nucleus of the author's whole argument is that race improvement is positive, not negative; that prevention of the birth of the unfit does not *improve* the race; it merely prevents deteriorating. "There is only one way in which the race can be improved, namely, by *constructive chastity.* Woman has innately the wisdom and power to select her proper mate; Man has the wisdom and power to reciprocate when he is chosen."

CHEMICAL PATHOLOGY

Chemical Pathology. By H. Gideon Wells, Ph.D., M.D., Professor of Pathology in the University of Chicago and in Rush Medical College. Fifth Edition, Revised and Reset. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 790.

In the five years that have elapsed since the publication of the fourth edition of Wells's excellent *Chemical Pathology,* the subject of biological chemistry has broadened its horizon to a considerable extent. This has necessitated the rewriting of much of the former edition, with the inclusion of two new chapters, but the present edition still shows the admirable selection and condensation that has always characterized it. Evidences as to the activity of laboratory research are abundant in this volume, for example, in discussing flocculation reactions in syphilis, one finds that since the 1920 edition five additional procedures for the detection of this disease have been included: the Meinecke reactions; Bruck's nitric acid reaction; the formol reaction; the Sachs-Georgi reaction, and the Vernes reaction. The enor-

mous amount of investigation which has been carried forward in the study of the deficiency diseases has made necessary a rewriting of much of this section of the book, and in this edition, due to the additional information obtained during the past five years, scurvy and rickets are now fully established as deficiency diseases. These illustrations cite but a few of the important changes in the text, so that to those who are familiar with the former editions of this work, this careful revision will be very welcome. It offers to pathologists, clinicians, chemists and medical students a most readable presentation of the subject of chemical pathology.

PROPRIETARY MEDICINES

Guide-Formulaire des Spécialties Pharmaceutiques. Par Dr. H. Legrand d'Amiens. Paris: J. B. Baillière et Fils, 1925.

This compact but rather extensive volume of upwards of eight hundred pages deals exclusively with what we would call proprietary medicines, their composition, indications, and doses. Our French colleagues seem increasingly devoted to the prescription of these therapeutic specialties in preference to the ordination of officinal preparations as specified and ordained in the respective formularies and pharmacopœias. As the specialties enumerated are all French, we are a bit at sea in looking them over, and are reminded of the American abroad, with a most inadequate linguistic preparation, who at a Paris restaurant picked out haphazard a number of apparently interesting culinary items, such as pot-au-feu, petite marmite, bouillon d'Alambert, bisque de tomates Maintenon, only to find himself surrounded by seven variations on a single theme—namely, soup! And so, one fears, it might be with *afatyl carrion, agar gigon, emplâtres vigier, ovo-lécithine billon,* or even *sparadraps beslier* and *soufre collobiasique dausse.*

CARBON MONOXIDE POISONING

L'Oxyde de Carbone et L'Intoxication Oxycarbonique: Etude Chimico-Biologique. Par Dr. Maurice Nicloux. Paris: Masson et Cie. Editeurs, 1925.

The frequency of poisoning at present from automobile exhaust has made the question of carbon monoxide a rather vital one. This volume contains a general survey of the sources of the gas, the symptoms of poisoning, its treatment, and the ordinary analytical methods used for the determination of its presence in air and in the blood. The bibliography is largely from French sources, and is fairly complete.

JESUIT MARTYRS

The Jesuit Martyrs of North America. Isaac Jogues, John De Brébeuf, Gabriel Lalement, Anthony Daniel, Charles Garnier, René Goupil, John Lanande. Illustrated. By John J. Wynne, S. J. N. Y. Universal Knowledge Foundation. Pp. 246.

This is the first complete and connected account of those men of the seventeenth century whose object in coming to this country and Canada was the conversion of the Indians to the Catholic faith. Their individual stories have been often told by word of mouth, or included as chapters in historical or religious works, but it has remained for this author to connect them as a whole in the historical backgrounds to which they belong.

The book shows an indefatigable zeal on the part of the writer to sift all authentic sources, historical documents and maps for proper material for making his history accurate and inclusive. The treatment is purely historical with a "religious" coloring. The portraits, other illustrations, and maps are good, and at the end is a long list of references and a bibliography of material on the subject.

The whole attitude of the author is, of course, that of the missionary, and his sympathy with the "savages" is that of uplifting them from their heathen state, with a total lack of understanding of their own manners and customs, and that they might have lives of their own, which they wished to lead. But the early Fathers of whom he tells us must have been men of unusual sympathy considering the times in which they lived, and their martyrdom was surely won through all the tortures of fire and the sword.

One of the chief interests of the book lies in the descriptions of this country at that time—the seventeenth century—and of the manners and customs of the various tribes of Indians that were undergoing conversion attended with so much agony to all concerned.

Medicoliterary Notes.

Peter the Czar, by Klabund, which has proved to be one of the most interesting of recent foreign novels, was written, according to press reports, by a man whose real name is Hensche. He is a small, delicate person with a lung complaint which makes it necessary for him to frequent Swiss health resorts. He is considered something of a mystery by his fellow countrymen, although he is well known in bohemian and dramatic circles. His play *Kreiderkreis* recently produced in Berlin, has proved a great success. It has a Chinese setting. His marriage was announced a few months ago to the leading woman of the Braslau Stadt Theatre.

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The American Museum of Natural History had on exhibition during January an interesting collection of photographs of men and women of science. It is the property of Mr. Julian P. Scott.

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That bees dance the Charleston, waltz, shimmy, tango and many dances with which human beings are unfamiliar, is the declaration Dr. von Frisch of the Munich Zoological Gardens, who maintains that bees do not dance as a means of amusement, but in order to tell their mates the location of newly discovered honey domains. By their gyrations, free and easy as classic Greek dances, they not only tell the direction of the new pasture, but also the distance and the kind of flowers, adds Dr. von Frisch, whose investigations have also proved that bees are practically colorblind, being able to distinguish gray, but unable to differentiate between other colors.—*N. Y. Times.*

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Among interesting articles in the issue for January of the *American Journal of Public Health* are: The Engineering Aspects of Oyster Pollution, by R. E. Tarbett, sanitary engineer of the U. S. Public Health Service; Necessity for Changes in the Ventilation Laws of the United States, by Leonard Greenburg, Ph.D., associate sanitary engineer of the U. S. Public Health Service; and Qualifications for Public Health Nursing, the report of the Committee on Qualifications for Public Health Nursing Positions, presented at the annual meeting last October of the American Health Association.

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Mental and physical disorders caused by vodka have become so prevalent in Russia since the introduction of a new forty per cent. variety, that the Soviet government has appointed a special commission to draft measures for dealing with intoxication. The number of stores selling liquor has

been limited to the neighborhood of factories, and the sale of vodka is restricted on Sundays and holidays. A heavy fine for drunkenness has been decreed. Many deaths have been caused by the new vodka and delirium tremens, hitherto practically unknown in Russia, is now prevalent.

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New York is the first state to summon a safety congress. This will be held in Albany, March 11th-13th. Governor Smith will be honorary president. Commissioners of motor vehicles of seven states, officials of 110 cities, and representatives of the Federal and Dominion governments will participate in the congress, in addition to the leading safety experts of the country. Several large and very full exhibits of safety devices, traffic schemes, automobile devices, and many other kinds of equipment are being planned.

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The *American Journal of Public Health* for January has for a supplementary section the report of the Committee on Municipal Health Department Practice, including a revised appraisal form for city health work.

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The Mayor and Deputy Mayor of Stoke-upon-Trent, one of the "Five Towns" of Arnold Bennett's series of novels on that subject, are up in arms against the novels as untrue criticisms of the district. They accuse Bennett of exaggeration and distortion and say that the novels will damage the prestige of the Five Towns, and that they are libels of both the people and the localities. Other municipal officers of the district, however, scout these claims and call the novels true pictures of the places and their inhabitants. This contest is of especial interest now that a complete edition of all the "Five Towns" novels, similar to that of Galsworthy's *Forsyte Saga,* has been announced by the publishers.

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A woman aged 146 years, with her son of 117 years, have been found living in the mountains of Persia, according to the London *Daily Express.* The discovery was made during the taking of Persia's first census. These two are close seconds to the oldest man in the world, a Turk who is registered as being 150 years of age, and who was last married at the age of 142.

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The Biology of Population Growth, by Raymond Pearl, is one of Alfred A. Knopf's recent publications.

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The Joint Committee on Methods of Preventing Delinquency is distributing copies of *The Relation of Social Work to Psychiatry,* by Dr. Ralph P. Truitt, director of the Division on Prevention of Delinquency of the National Committee for Mental Hygiene. These may be obtained without charge from the Joint Committee, 50 East Forty-second Street, New York City.

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The discovery of serums preventing blood poisoning, erysipelas, puerperal fever and other disorders has been announced by the University of Leningrad. The discoverer is the professor of bacteriology at that institution, Dr. Sergius Zabolodny. In preparing the serums use is made of what are called "aromatic bacteria," which are said to possess the property of dissolving albuminous substances in the body.

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Vanity Fair for February contributes several articles of interest to the medical profession. The first of these is entitled A Few Well Chosen Words, by Aldous Huxley, who contends that "words are dangerous as well as useful. They have made it possible for us to organize our thought; but they have made it impossible for us to think except in terms of language." With this as a text, Mr. Huxley proves his case with illustrations of what he terms "dangerously moving words," as, for instance, the word sex, which in many countries arouses a very definite reaction. However, in India the word beef arouses much stronger emotional reactions than sex with us, on account of the many local food taboos. The article is a valuable contribution to word psychology. Other articles of interest are The Psychology of Acting, by A. B. Walkley; Art and Morality, by D. H. Lawrence; and The Dance Mania, by Dr. Joseph Collins.

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Because so many of its employees have lost their lives from the inhalation of poisonous gases in the Montier Grandval tunnel in Switzerland, the Federal Railway Company has provided gas masks like those used during the war for engine drivers and guards on freight trains which pass through the tunnel. It is stated that there is no danger on the passenger trains as these have a much greater speed. The Swiss press, however, is demanding immediate electrification of the line, which is the highway to the winter sports region.

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Two interesting sociological and ethnological studies have recently been issued by the Association for the Study of Negro Life and History, Incorporated, with headquarters in Washington, D. C. These are entitled, respectively, Free Negro Heads of Families in the United States in 1830, and Free Negro Owners of Slaves in the United States, Together with Absolute Ownership of Slaves in the United States in 1930. Carter Godwin Woodson, editor of the *Journal of Negro History,* is the author of both studies.

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The British Museum has recently put on exhibition a statuette of Socrates, made of Parian marble which is said to be the only sculptured full length figure of the great philosopher made within a reasonable time after his death. It was discovered at Alexandria and has been declared to have been made in the fourth century, B. C. He is shown with the characteristic very snub nose, but not completely bald as is the case with so many other representations of the great Athenian.

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The many New Yorkers who enjoyed the productions of the Moscow Art Theater will be distressed to learn that its able director and its greatest actor, Constantin Stanislavsky, has been stricken blind.

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Animal Heroes of the Great War, by Ernest Harold Baynes, is one of Macmillan's most interesting recent publications. To secure the material for his book, Mr. Baynes travelled for nine months in Europe, Egypt and Palestine. The stories deal with the great draught horses, the cavalry horses, the camels, mules, oxen, dogs and carrier pigeons. All lovers of anmals will find the book entrancing.

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One of the books of the month is Ted Shawn's The *American Ballet,* with an introduction by Havelock Ellis, published by Henry Holt & Company. Another publication from the same firm is Milton Waldman's *Americana,* which has been described by a well known critic as "the first careful and adequate treatment of the *materials* of our history." Mr. Waldman, although editor of the *London Mercury,* is an American.

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The Massachusetts Society for Mental Hygiene began in November the publication of a new bulletin called *The Human Factor,* devoted to every day problems of industrial relations as they relate to mental health. It is issued especially for busy executives, personnel workers, educators in stores or factories, physicians, and all other persons who are in any way concerned with the human factor in industry. The articles are non-technical and popularly written, and the material presented is sound and authoritative.

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The European press reports an epidemic of trachoma so prevalent in several sections of the Palatinate that schools have been closed to prevent the spread of the disease. One of the explanation advanced for the epidemic is that the disease was introduced by the Moroccan troops of the occupation forces.

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The city of Vienna, justly famous for its beauty, its art, and its music, has recently been the centre of attraction for all interested in the questions of health. The Health Exhibition was opened there on the 28th of April last by Dr. Hainisch, President of the Austrian Republic, and was housed in the vast buildings of the Messapalast, which at one time was used as the imperial stables. These buildings are situated in the very heart of the city and have been specially adapted for such occasions. Here the different aspects of public health were vividly presented in such a manner as to appeal not only to the technical mind but to the uninitiated as well. The loan by the Dresden Museum of Health of its interesting collection of material relating to human anatomy and physiology was much appreciated and contributed in no small measure to the success of the exhibition.—*World's Health.*

Abstracts from Current Literature

GYNECOLOGY AND OBSTETRICS

Influence of Pregnancy upon the Lipoids of the Blood. Margaret Tyler and Frank P. Underhill (*Journal of Biological Chemistry,* November, 1925) found that beginning as early as the third month in pregnancy the total ether extract of whole blood of pregnant women is higher than that of nonpregnant women, the increase being progressively augmented until term. Cholesterol, cholesterol esters, and lecithin increase gradually until term, when each is approximately one third higher than at the third month of pregnancy. During the period of pregnancy, the relation of cholesterol esters to the total cholesterol remains fairly constant, and the esters form a larger percentage of the total cholesterol than obtains in nonpregnant women. The relation of lecithin to cholesterol remains fairly constant during pregnancy, and is at all times within the normal limits for that value in nonpregnant women. During the first two weeks of the puerperium the values for the ether extract and for the individual lipoids of whole blood remain high.

Exclusive Röntgenotherapy of Carcinoma of the Cervix Uteri.—Friedrich Voltz (*Klinische Wochenschrift,* July 16, 1925) made a statistical study of 755 cases of carcinoma of the cervix uteri treated only with irradiation therapy and draws the following conclusions:

The results of exclusive irradiation therapy may well be favorably compared with those from surgical treatment. In a certain respect they may even exceed the results from surgery, because the former may still produce results when the latter is futile. The excuse for a return to surgery because we have no positive indications for a successful irradiation therapy is no longer tenable; where none are available they must be ascertained. The claim that irradiation therapy gives a greater number of recurrences than does operation is not true. The reproach that a case of carcinoma that has been cured by röntgenotherapy could have been cured just as well by operation is equally false. On the contrary, statistics show that every carcinoma of the cervix that can be cured surgically can be cured equally well by irradiation. In fact, irradiation therapy can even cure inoperable carcinomas, which surgery cannot do. While it is true that there is still much to be learned in regard to irradiation therapy, if only inoperable cases were subjected to irradiation therapy we would gain the wrong picture of its possibilities. In order to develop and improve our methods we must also use irradiation in operable cases. This procedure is justified by the statistics on the results already obtained.

Retention Catheter in Pyelitis of Pregnancy.—J. O. Rush (*Surgery, Gynecology and Obstetrics,* March, 1925) states that pyelitis and pyelonephritis are pus conditions, and will respond to drainage as do pus conditions in any other portion of the body, and (indwelling) retention ureteral catheter is the method of choice. In all cases of pyelitis and pyelonephritis, even in children, the retention ureteral catheter is preferable to other forms of treatment. Catheter drainage is preferable to lavage with drugs, since the strength of the drug used is insufficient to kill the organism producing the disease. It is my opinion that the passage of catheter by its dilatation of the ureter is what benefits the patient in lavage and not the drug used. I believe sterile water will produce as good results in lavage as nitrate of silver. No surgical procedure should ever be resorted to until catheter drainage has been given a most thorough trial. The finest quality imported x ray catheter should be selected for this work. Urinary deposits have never been found on this type of catheter, even after it has remained in the ureter twenty-six days.

A Study of the Gram Positive Cocci Present in the Vagina and Cervical Canal of the Uterus.—Lloyd Arnold, and Louis Brody (*Journal of Laboratory and Clinical Medicine,* April, 1925) isolated one hundred and seventy strains of gram positive cocci from the vaginal tract, forty-eight staphylococci, sixty-six enterococci, and fifty-six streptococci, two hundred and sixty-two strains were isolated from the cervical canal of the uterus, seventy staphylococci, ninety-six enterococci, and ninety-six streptococci. The vaginal bacterial flora resemble in many respects certain fecal types. The gram positive cocci of the cervical canal differ from those found in the vaginal tract by a gradual loss of the power to ferment mannite, so typical of strains of fecal origin, and they become more pathogenic for mice. The average limiting hydrogen ion concentration was 5.0, the variations being between 4.7 and 5.6, so they were all within the human or pathogenic range. This the authors believe to be a result of the contact of these strains with the exudation present in the cervix and vagina of the cases studied.

Advantages of the More Conservative Operation for Myoma of the Uterus Over Radical Operation and Röntgen Castration.—B. Aschner (*Wiener klinische Wochenschrift,* June 18, 1925) says that the destruction of the menstrual flow by extirpation of the uterus, especially the supravaginal amputation and röntgen castration (and also radium irradiation) leads by no means not only to the frequently indifferent and transient socalled premature climacterium, but often is followed by sereve and sometimes life endangering and life shortening general diseases, such as hypertonia, arteriosclerosis, gout, nervous diseases, psychoses, and apoplexy.

Atypical uterine hemorrhages, such as hemorrhagic metropathia, hemorrhages of puberty, climacteric hemorrhages, and the like, can be cured almost always by general treatment, such as regulation of the metabolism, the digestion and the circulation (bloodletting), in addition to rest in bed, styptics, and curettage.

Extirpation of the uterus, and especially, supravaginal amputation and röntgen irradiation are almost always dispensable in hemorrhagic metropathy and dangerous to the general condition whenever they can possibly be avoided.

In myoma, even with very large and very numerous tumors, the retention of a uterus fully capable of menstruation to the fullest extent up to the latest climacteric age should be the goal as regards the general condition and is almost always attainable. The radical methods of operation (supravaginal amputation and total extirpation) and the röntgen castration for myomas should be limited as much as possible because of their injurious effects on the general condition and replaced by the conservative myoma operations (enucleation, enucleation resection), as long as there exists a menstrual flow.

Infundibulin: Indications for Its Use in Surgical and Obstetrical Practice.—W. Blair Bell (*British Medical Journal,* June 6, 1925) advances certain general contraindications to the use of infundibulin. It should not be administered during an operation if there be respiratory failure, for the normal amplitude of respiratory movements is diminished by it. When there is myocardial or valvular disease of the heart without complete compensation infundibulin is absolutely contraindicated. A fatal issue may follow the exhibition of a small dose. Even in the presence of compensation it is a dangerous drug to employ. In renal disease associated with a high blood pressure the use of infundibulin is inadvisable.

In the prevention of shock much can be done by the use of infundibulin in debilitated patients with low blood pressure. The administration of this extract several times daily for several days before a serious operation, undertaken in septic or cachectic cases, often enables the patient to withstand the traumatic effects of operation and the toxemic effects of the anesthetic. In cases where the falling blood pressure during an operation denotes deterioration before any other evidence is available, infundibulin may save the situation. In cases associated with a certain amount of trauma from the separation of adhesions, the subsequent paralytic distention may be prevented by the intramuscular injection of 0.5 c. c. of infundibulin every few hours in the aftertreatment. In order to obtain a certain pressor effect on the intestinal muscle, 1.0 c. c. should be administered, followed by a turpentine enema. In acute dilatation of the stomach, this organ should be washed out ten minutes after infundibulin has been injected. Infundibulin is contraindicated in these complications if an operation involving repair or anastomosis of the stomach or intestines has been performed, and, of course, if unrelieved obstruction be present.

When there is atony of the musculature of the bladder with distention a pressor effect and evacuation may follow

an injection of infundibulin, but this result is somewhat uncertain. The inability to empty the bladder after gynecological operations and after parturition may generally be overcome by the judicious use of infundibulin (1.0 c. c.) and a catheter.

In the termination of pregnancy, the indications may be classified as follows: 1, for the expulsion of a dead child; 2, in order to obviate the possibility of disproportion between the maternal and fetal parts; 3, in the treatment of antepartum hemorrhage. In the first two groups, infundibulin administered every four hours for several days in doses of 0.5 c. c. occasionally precipitates labor; but such an event is comparatively rare unless the patient be at term or the child is dead. In cases of postmaturity it is very wise to give the extract as indicated. The first method of treatment in cases of accidental hemorrhage in which the bleeding is not entirely concealed, and in which there are indications for interference, consists of rupture of the membranes and an injection of infundibulin. In accidental hemorrhage which is entirely concealed, it should not be employed until the uterus has been emptied. In placenta previa, especially when the implantation is not central, infundibulin may form a valuable adjunct to other methods of treatment, such as rupture of the membranes. In ordinary cases of Cæsarean section 0.5 c. c. of the extract should be injected into the triceps of the patient after the uterine wound has been sutured, if retraction appears then to be incomplete. When Cæsarean section has been done for concealed accidental hemorrhage and the uterus has been preserved, a few cubic millimetres should be injected directly into that organ.

In primary uterine inertia of the physiological type, we should never administer infundibulin, for it is not required, and, unless the diagnosis be accurate, serious trouble may follow. In pathological primary uterine inertia (with low blood pressure) and a normal uterine musculature, 0.5 c. c. of the extract is administered intramuscularly two or three times daily. In secondary uterine inertia due to exhaustion of the uterine muscle, infundibulin is of considerable help.

The only scientific indication for infundibulin during labor is the evidence, readily obtainable, of insufficiency of this substance in the blood. This evidence consists of a history of protracted labor, with gradually diminishing force and frequency of the previously normal contractions and the state of the blood pressure. During labor an initial dose of more than 0.25 c. c. intramuscularly should never be given, and later doses should not exceed 0.5 c. c. The contraindications during labor include any disproportion between the fetal and maternal parts and the presence of efficient uterine contractions. The routine use of infundibulin as soon as the second stage of labor is over to hasten the third stage is neither scientific nor expedient. It may, however, be used advantageously after the expulsion of the placenta, when uterine inertia has permitted postpartum hemorrhage.

Puerperal subinvolution of the uterus may be effectually treated by the administration of infundibulin—the sooner the better.

Spontaneous and Artificial Changes in the Menstrual Rhythm.—R. Hofstätter (*Wiener klinische Wochenschrift,* June 6, 1925) states that the relationships between ovulation and menstruation are certainly less constant than has been believed heretofore. In addition to the spontaneous and probably very regular ovulation, there is also an induced ovulation in the human being. Spontaneous ovulation occurs probably only then when the maturing follicle has not been induced to expel its ovum before that by sufficiently powerful stimuli, usually of a sexual nature.

The not very infrequent change of a menstrual wave to another period might be explained in a way, that an induced ovulation leads to another uterine bleeding by some additional accidents that are not always recognized by us, or in this way, that a bleeding produced in a vasomotor fashion or possibly as a result of a curettage acts in a similar manner upon the whole organism to a normal menstruation. In this way such a bleeding can to a certain extent fulfill all the functions of a normal menstruation and bring the uterus to the zero point of its cyclic function, so that in accordance with its accustomed rapidity of regeneration of the mucosa it again takes four weeks until a pregravid change degenerates with the omission of the awaited nidation of the ovum. The corpus luteum produces neither the menstruation nor does it retard it. The fact that an impregnation may occur at any time in spite of a normal menstruation can hardly be explained in any other way than by the assumption of the possibility of an induced ovulation in addition to a spontaneous ovulation.

Relationship of Neonatal Morbidity and Mortality to the Toxemia of Pregnancy.—I. A. Abt (*Archives of Pediatrics,* July, 1925) investigated 210 mothers suffering from toxemia of pregnancy. Toxemia occurred more frequently in primiparous than in multiparous mothers. Thirty-nine infants were born dead; twenty-seven were stillborn; twelve were macerated. In this series of cases, eighty-two were born full term, one hundred and twenty-two were more or less premature; in twenty cases the information was not obtained. Infants who were born of eclamptic mothers showed diffuse hemorrhagic areas and also anemic and hemorrhagic necroses in the various organs, which are similar to the pathological changes found in eclamptic mothers. Blood and albumin have been found in the urine of these infants. Necrosis of the liver cells is sometimes observed. The neonatal mortality in this series was 24.77 per cent. The maternal eclampsia did not seem to effect a permanent injury in infants who have survived. Infantile convulsions occurred only five times, but it is to be remembered that many of the mothers who had convulsions gave birth to stillborn children shortly after the eclampsia. Congenital malformations occurred eight times. It is possible that maternal toxemia occurring early may favor fetal malformations.

Outlook for the Fetus with Pyelitis of the Mother.—H. Naujoks (*Zentralblatt für Gynäkologie,* May 23, 1925) recalls that the children of pregnant women suffering from pyelitis are threatened by serious danger and that many pregnancies do not reach their normal ending; it is only rarely that a plausible explanation for the intrauterine death of the fetus can be found, and especially in the investigation of the causes of repeated abortions we are forced to advance theoretical speculations, for which clinical or experimental proof has not as yet been advanced. A definite basis for an etiological therapeutic procedure is therefore not available. The only possible procedure in these cases is the earliest possible thorough treatment of the pyelitis of pregnancy along the lines of general dietetic and drug therapy. In the vast majority of cases the patients readily respond to this treatment and steadily improve. Only after the complete failure of conservative measures is active therapy, which is not very gentle and absolutely harmless, indicated. All local measures must be exhausted before interruption of pregnancy in the interest of the child is undertaken. The interruption of pregnancy should be the last resort and undertaken only after serious consideration pro and con. Opinions differ regarding the possibility and advisability of avoiding a nephrotomy by the induction of abortion. The operation on the kidney during pregnancy, which primarily takes into consideration only the fate of the child, often leads to a spontaneous interruption of the pregnancy later and may lead to serious danger during the puerperium as a result of the long continued suppuration. It deserves consideration at best only when artificial abortion is not available.

Shoulder Pain in Ruptured Ectopic Gestation.—A. E. Roche (*Clinical Journal,* June 3, 1925) emphasizes shoulder pain as of diagnostic interest.

The following points deserve notice: 1. In four out of five cases of ruptured ectopic gestation pain was felt in the region of the shoulder. 2. In all four cases the shoulder pain was preceded by abdominal pain. 3. In favor of this shoulder pain being caused by stimulation of the phrenic sensory fibres by blood which has travelled up to the diaphragm are the following facts: In the first patient there was no more pain in the right iliac fossa after the operation, but the pain in the shoulder continued for twenty-four hours, preventing sleep. In this case a little blood adhering to the diaphragm may well have sufficed to maintain the shoulder pain, especially as the procedure of swabbing the peritoneum free from blood, which was performed in its lower part, is impossible to carry out in its upper part. The fifth patient, with preoperative pain in the left shoulder region, complained, on the day after operation, of stabbing pains in the right side over the seventh and eighth ribs on breathing. There was no cough, nor any signs in the chest, and the pains had gone by the next day. These can be explained, pleurisy and pneumonia

being out of the question, by the displacement of blood by operative manipulation stimulating intercostal nerves. The sixth to twelfth dorsal nerves provide the sensory supply to the margin of the diaphragm. In the fourth patient sudden shoulder pain actually developed during abdominal palpation, this phenomenon being quite consistent with the upward manipulation of blood so as to impinge on the diaphragm. 4. In the first two patients with pain in the shoulder region the flanks were resonant, although the peritoneal cavity contained large quantities of blood. In patients, then, suspected of harboring ruptured tubal gestations, the presence of shoulder pain should be regarded as an extremely valuable sign of free peritoneal blood (in fact, of blood having hit the diaphragm), and as equal or superior to percussion of the flanks as a diagnostic aid, while less disturbing to the patient. 5. In one case the right shoulder was painful when the left tube was ruptured, in another the left shoulder was painful when the right tube was ruptured, the side on which the shoulder is painful thus not serving as a clue to the side of the ruptured tube. This, however, does not detract from the value of this symptom, as the important thing to diagnose is not the side, but the fact of the rupture.

Hyperemesis Gravidarum.—H. O. Howitt (*Canadian Journal of Medicine and Surgery,* January, 1925) reports a case of this nature in which the patient was apparently approaching death, a change for the better followed almost immediately the commencement of treatment, and her condition continued to improve rapidly to recovery. The treatment consisted of 1, rest in bed; no visitors; 2, the giving of intravenous saline; 3, sodium bromide drips per rectum every four hours added to or alternating with drips of sodium bicarbonate; 4, the use of insulin, five units three times a day.

Pneumoperitoneum in Diagnosis of Early Pregnancy.—L. E. Burch (*Surgery, Gynecology and Obstetrics,* May, 1925) presents his operative technic and concludes from his experience that for obscure pelvic lesions and early pregnancy determinations inflation of the peritoneum by either the abdominal or uterine route is perfectly safe in cases in which there are no contraindications. There is very little pain if the patient is kept in the kneechest or Trendelenburg posture during the inflation and for fifteen minutes after it. The method is of the greatest aid in obscure pelvic cases and will make an accurate diagnosis possible. It is possible to diagnose with certainty pregnancy in the early weeks, provided the pathognomonic sign mentioned in the paper is shown in the röntgenogram.

Sedimentation Test in Gynecology.—J. L. Baer and R. A. Reis (*Surgery, Gynecology and Obstetrics,* May, 1925) find that the sedimentation test is apparently of no value in the early diagnosis of pregnancy. 2. It is useful in determining the presence or absence of infection in the body. With pelvic pathology, a negative sedimentation test (a sedimentation time over two hours) conclusively rules out pelvic infection. 3. The rate of sedimentation is directly proportional to the virulence of the infection. 4. The test is a further aid in determining the safe time for operation. 5. The sedimentation test seems a more delicate prognostic index, good or bad, than either the leucocyte or temperature curve.

Degeneration of Fibromyomata of the Uterus.—L. Seed (*Surgery, Gynecology and Obstetrics,* September, 1925) finds that gross degeneration occurs in approximately thirteen per cent. of fibromyomata. Edematous, cystic, and myxomatous degeneration are a part of the same pathological process, probably due to a gradual diminution in the blood supply. There are no clinical symptoms peculiar to it.

Red degeneration is an aseptic necrobiosis characterized by fatty degeneration, thrombosis of the vessels, extravasation of red blood cells, and blood pigment. Pathologically it is a "red infarction," and can be explained by a sudden complete vascular obstruction affecting chiefly the venous system. The end result is a total fatty necrosis with transformation of the hemosiderin into hematoidin, and subsequent calcification. The occurrence of symptoms depends on the size of the tumor and the acuteness of the necrosis. There is local pain and tenderness, and a mild toxemia.

Infection following necrosis of a submucous fibromyoma is very distinctive and probably accounts in itself for all symptoms.

Calcification has little clinical significance.

Cæsarean Section in Obstetrics.—A. J. Rongy (*International Journal of Medicine and Surgery,* September, 1925) finds that Cæsarean section, as a method of delivery in cases of placenta previa, is not, as yet, accepted by the medical profession generally. It is surprising how such cases are still badly mismanaged. The majority of them reach the hospital in a badly exsanguinated state. However, he does not know of any method of treatment other than a rapid abdominal delivery that will control the bleeding in a patient who is suffering from a placenta previa before labor has actually set in. The uterine cavity is packed with iodoform gauze in order to prevent postpartum bleeding, and the uterine and abdominal wounds are closed in the usual manner. Blood transfusion may be given, if found necessary. It will certainly enhance the convalescence.

The author is strongly convinced of the necessity, in all bleeding cases, to have the patients, in the last two or three months of pregnancy, transferred to the hospital. It has been his experience that patients suffering from eclampsia, who are not in labor, who are steadily growing worse because of frequent convulsions, and in whom the condition of the soft parts renders the operation from below dangerous, are best treated when they are delivered by the abdominal route.

Women who suffer from heart disease can and should be delivered by Cæsarean section under local anesthesia in the thirty-seventh or thirty-eighth week of pregnancy, thus saving them the strain of labor and the tax that the last few weeks of pregnancy puts upon the heart; furthermore they can be sterilized if deemed necessary.

There is very little postoperative disturbance when the operation is done under local anesthesia. It must be done quickly and the uterus must not be lifted out of the abdominal cavity. Pulling and dragging of the uterus causes the patient a great deal of pain and discomfort. Assisted by an efficient staff, the time consumed in the performance of such an emergency operation should not last longer than ten to fifteen minutes.

The elderly primipara is becoming more and more of a problem to the obstetrician. In many of these patients the cervix is thick and hard. Dilatation, if it takes place at all, is very tedious and often complete inertia sets in before the dilation is complete. The problem then arises as to what method of delivery should be chosen. The author is fully convinced that the abdominal route of delivery will conserve the greatest number of mothers and children in this group of cases.

Treatment of Abortion.—H. K. Tuttle (*Surgery, Gynecology and Obstetrics,* January, 1925) concludes from a tabulated report of cases that:

1. Abortion of any type is a serious condition and operative treatment should never be considered lightly. Unless proper hospital facilities and operative technique are available the condition had better be treated expectantly.

2. Hemorrhage sufficiently severe to call for immediate active treatment is seen in approximately five per cent. of all cases. Attention is called to those cases with little or no external bleeding that pass large clots at intervals which, if passed unobserved, will soon bring the patient to a dangerous condition from hemorrhage or lowered resistance to infection.

3. The records of this hospital show that febrile abortion cases operated upon promptly have slightly higher average number of postoperative febrile days, a lower per cent. morbidity, and fewer average hospital days than those operated upon a number of days after the temperature has remained normal. The average febrile days, morbidity percentage, and average hospital days of operative cases are lower than in the nonoperative. We believe that in the ordinary incomplete abortion the sooner the uterus is emptied the shorter will be the convalescence. Many cases will be discharged from the hospital at the end of a five day period.

4. The treatment of septic abortion requires mature judgment. Those cases where infection has extended beyond the uterus, and without evidence of retained necrotic placenta or membranes should be treated expectantly. However, in our opinion when such tissue remains in the uterus it is just as essential to remove it as a sloughing appendix in the abdomen, provided the removal can be accomplished without spreading the infection. Both are sources of infection so long as they remain *in situ.*

5. Surgical treatment is difficult to standardize and no one method will apply equally to all cases.

PEDIATRICS

Skin Temperatures in Normal Children.—From a study made of five normal children, Fritz B. Talbot, with Alice Johnson Dalrymple and Mary F. Hendry (*American Journal of Diseases of Children,* October, 1925) found indications that the skin as an organ has some power to prevent loss of heat as well as to accelerate loss of heat by perspiration.

Skin Temperature and Basal Metabolism During Fasting.—In another paper based on an examination of four children suffering from idiopathic epilepsy who underwent fasts of seven to fourteen days duration, the same authors say that they observed that the rate of heat production diminished in proportion to the fall of skin temperature; and the longer the fast the greater the fall of temperature.

Importance of Considering the Body Mechanics of Children.—Lucy Porter Sutton (*American Journal of Diseases of Children,* October, 1925) urges that body mechanics be considered in the examination of every child. Correction of faulty posture in childhood gives the best results and frequently remedies conditions such as constipation, irritability and poor appetite.

Some Experiences in Mental Reconstruction.—Alice Hinckley (*Archives of Pediatrics,* September, 1925) in work undertaken primarily to discover causes of failure of children to complete the grammar grades gives five interesting instances of children, aged from three to eleven years at the time of their special tutoring under her direction started, and describes the positive improvements made. All the children began with some serious form of sensory motor interference which would ordinarily be looked upon as quite beyond expectation of change.

Effect of Heat on the Solubility of the Calcium and Phosphorus Compounds in Milk.—Raymond W. Bell (*Journal of Biological Chemistry,* June, 1925) used in all these experiments fresh, raw, skim milk, heated to various temperatures to study the effect of heat on the solubility of the calcium and phosphorus content. Pasteur-Chamberland filters and a high speed supercentrifuge were used. There was apparently a loss in the soluble calcium and phosphorus contents of the skim milk due to heat, the amount of the loss depending upon the temperature to which the milk has been heated. The results from the methods employed indicate that definitely measurable amounts of these substances are removed from solutions in milks heated to 170° F.

Comparative Nutritional Value of White and Whole Wheat Flour.—C. Ulysses Moore and Jessie L. Brodie, by an experiment on mice in the University of Oregon Medical School (*Archives of Pediatrics,* September, 1925) call attention to the superiority of whole wheat over white or patent flours, not only from the viewpoint of health and life but also of economy.

Gastric Digestion in Newborn Infants.—C. Griswold and A. T. Shohl (*American Journal of Diseases of Children,* October, 1925) in a study of twenty-five normal infants have observed a greater capacity for digestion in newborn infants than later in infancy. The gastric juice of unfed newborn infants contains free hydrochloric acid, the average ph being 2.6. The digestion of fifty c.c. of partly skimmed cow's milk was practically complete in one hour.

Microcephalus with Report of Case.—In a report (*Archives of Pediatrics,* September, 1925) Joseph H. Marcus describes a case of microcephalus in a nine months' old infant where convulsions were caused by gradual and constantly increasing intracranial pressure which led to death.

In a general discussion of the subject Dr. Marcus says that the life of a microcephalic may extend into adult or even advanced years as the physical health is usually not amiss. On the whole the mental prognosis is in proportion to the size of the head. With heads under eighteen inches in circumference, the manifestation of mental power is usually so small as to come under the category of idiocy; between eighteen and nineteen inches, the cases may be designated as imbecile; and from nineteen to twenty inches is not an uncommon measurement in cases of mere feeblemindedness. There is hope of improvement under training, especially for the higher grades of this type. The operation of craniectomy, recommended in 1890 in microcephalus cases, has been abandoned because of disappointing results and the knowledge that the small skull is simply moulded to the brain, the development of which has been arrested at the fifth month of intrauterine life.

Three Case Reports.—These case reports are given by D. Lesesne Smith (*Archives of Pediatrics,* September, 1925) to emphasize the importance of obtaining a thorough history as to the foods, as well as the drugs, that a nursing mother is taking when presenting her child for examination. An unexplained severe rash on an infant of four months was discovered to be due to Peacock's bromides which the mother had been taking during pregnancy and since the birth of the child. Another mother, interpreting some general advice as to diet, had been taking four raw eggs and three cooked ones every day. As soon as the eggs were discontinued the infant's rash cleared up. The third case was of a mother who had also been taking bromides in large quantities.

Amyotonia Congenita.—John Aikman presents two and probably three cases of amyotonia congenita to add to the literature, all females and in the same family (*Archives of Pediatrics,* October, 1925). The first girl died at five months, the second at nineteen months and the third at seven months. The first two had had very slight movements of hands and legs or none at all while the third appeared normal until the age of two months when she, too, stopped kicking and moving her arms and began the abdominal type of breathing.

Heat Exhaustion in Infancy and Childhood.—Adolph G. DeSanctis and Frank Shapiro (*Archives of Pediatrics,* September, 1925) find that heat exhaustion or thermic fever as a direct cause for morbidity and mortality in infancy and childhood has been greatly underestimated. In hot spells we hear in the papers of adults succumbing to the heat; according to the authors it is clear that children also die from the same cause in proof of which two instances are cited.

A Case of Meningitis Caused by the Meningococus and the Paratyphoid B. Bacillus.—A case of meningitis caused by two different organisms, the meningococus and the paratyphoid B. bacillus is recorded beacuse of its rarity by Emanuel Appelbaum (*Archives of Pediatrics,* September, 1925). The patient was an infant boy, seven months old. The meningococcus serum was recovered from the first three lumbar punctures and the paratyphoid B. bacillus from the last six fluids. It is thought that by the use of the antimeningococcic serum the meningococcic infection was brought under control but the paratyphoid infection, probably the direct cause of death, was not checked by the mixed autogenous vaccine, consisting of both meningococci and paratyphoid B. bacilli.

Congenital Transduodenal Bands.—Russell L. Haden (*American Journal of Diseases of Children,* July, 1925) studied only in the last day of life the finding of marked reduction in the blood chlorides in two cases of pernicious vomiting clinically suggestive of intestinal obstruction, as suggested by such a cause. In one case the blood carbonate was markedly increased and in the other moderately increased, indicative of alkalosis. The urine was acid and contained acetone. Both patients died during a convulsion. The nonprotein nitrogen was estimated in one case and was found markedly increased.

In both cases the duodenum presented adherent congemital bands causing traction, kinking and apparently partial obstruction. Although in most instances importance must not be placed on congemital bands, the absence of other physical findings with the occurrence of a clinical picture of partial obstruction and the blood findings of greatly reduced chlorids are suggestive of duodenal obstruction as sometimes due to this cause. In such cases it may be possible by early diagnosis to save life by operation and division of the obstructive bands, the risk being reduced by the timely therapeutic use of sodium chlorid.

The Critical Preeruptive Fever (Roseola Infantum, Exanthem Subitum).—Henry Heiman (*Archives of Pediatrics,* July, 1925) states that when the fever falls and the characteristic macular or morbilliform eruption appears, the diagnosis is obvious to one who bears the condition in mind. But the question is, "Can this disease be diagnosed before the eruption appears?" The importance of an early diagnosis lies only in the prognosis for the infection is little or not at all contagious as far as we know. Unfortunately, we have no Koplik spots as a constant forerunner and forewarner of a coming exanthem. But we have a group of cardinal symptoms which can make us strongly suspect the disease, if not lead us to a positive diagnosis. When we see an infant with high fever, perhaps of a fluctuating nature, care free and happy, with a negative physical examination or with catarrhal symptoms

of the grippe, not of a measles type, and can find enlarged glands, especially the mastoid group, then we should be on the lookout for a crisis on the fourth day of the disease with the outcrop of a morbilliform eruption. If with this suspicion in mind we do a blood examination and find a leucopenia and lymphocytosis we are justified in making a tentative diagnosis of the critical preeruptive fever. Even without a blood examination, the author has succeeded in successfully forecasting the crisis and eruption in most of his later cases, especially if other cases have called his attention to their seasonal prevalence.

Light and the Antirachitic Factor.—Bringing together clinical experiences with corresponding observations from the laboratory C. E. Bloch and Frans Faber, Copenhagen, Denmark (*American Journal of Diseases of Children,* October, 1925) in an article on the effect of light and the antirachitic factor state that light rays and particularly ultraviolet rays have a healing effect in cases of rickets and tetany and a beneficial influence in cases of anemia and diabetes through stimulation of depressed functions. They believe that the hypothetical antirachitic vitamine does not exist. Moreover, since codliver oil has the same healing action on rickets and tetany as light has, although the former, in the quantities that can be given to children, acts more slowly and less surely than light, and as this effect is not due to the vitamine A substance, there must be a stimulating factor in cod liver oil similar to that in ultraviolet light, in addition to the vitamine A substance. This, the authors continue, is easily understood since Alfred F. Hess and Steenbock, Nelson and Black have shown by animal experiments that fats and other food materials, which are without effect on rickets, can be rendered active for experimental rickets merely by exposure to ultraviolet light. Eleanor Margaret Hume and Hannah Henderson Smith (Lister Institute) have shown that exactly the same is the case with sawdust. The conclusion is that the nonspecific stimulating factor must be the ultraviolet rays.

Ketosis Accompanying Infections in Children.—Kenneth H. Tallerman (*American Journal of Diseases of Children,* October, 1925) in a study carried out on a series of children presenting ketosis associated with infection, says that in the majority of cases there appeared to be a connection with hepatic inadequacy. He adds, however, that the hepatic function may have been deranged as a result of toxemia, low food intake or overaction of the sympathetic nervous system in fever.

Blood Chemistry of the Newborn in Health and in Inanition Fever.—From data on the blood chemistry of forty-one newborn infants, eighteen of whom were suffering from inanition fever, in the first five days of life, DeWitt H. Sherman, George W. Pucher, and Harry R. Lohnes (*American Journal of Diseases of Children,* October, 1925) conclude that in inanition fever there is a marked increase of blood urea nitrogen and aminoacids together with greater acidosis as shown by the decided decrease in carbon dioxide combining power. There was, on the other hand, no decrease in the percentage water content of the blood nor was there an increased salt concentration. These socalled inanition fevers are then, it is thought, not due to increased salt concentration of the blood.

Thirst Fever in the Newborn.—Ernst Poeck (*Zentralblatt für Gynäkologie,* June 13, 1925) states that even though thirst fever is usually the rule in elevations of temperature in the newborn infant, not every instance of fever in the newborn should be considered as thirst fever. Other causes, such as pyurias, bronchopneumonias, otitis, etc., must be excluded. Thirst fever is justly called so, but the deficiency of water is the only causative factor in only a few cases. Other factors are maternal toxins, salts, and the peculiar nature of the colostric milk in the stage of transition and the associated deficiency of water. The author attributes the chief cause to the lack of fluid and the resulting exsiccation. In many cases, as in the sudden appearance of lactation—either as the result of an increase in the mother's milk or the completion of the change from colostrum—the fever recedes spontaneously. However, one should not draw the conclusion from this that the thirst fever requires no treatment. The severity of the injury cannot be estimated beforehand and it is only a short way to thirst collapse and to the comatose reaction. Therefore a sufficient administration of fluids is indicated. The feeding of water is worth while if only to shorten the febrile stage by a few hours.

Controlling Infectious Diseases in Children's Out-patient Services.—Appropriations from the Committee on Dispensary Development of the United Hospital Fund of New York rendered possible a study of methods of controlling infectious diseases in children's out-patient clinics and dispensaries, and the Pediatric Section of the Associated Out-Patient Clinics of New York aided in planning and conducting the work. Charles Hendee Smith and Michael M. Davis, Ph.D., (*Archives of Pediatrics,* October, 1925), review their findings among which are data showing that the proportion of infectious diseases in the out-patient departments of the majority of institutions approaches one per cent.

Report on the Care of Convalescent Children in Institutions.—A full report on the care of convalescent children in institutions is submitted by the Sub-Committee of the Public Health Committee of the New York Academy of Medicine (*Archives of Pediatrics,* September, 1925). Among the various measures recommended are segregation by ages and by types of disease, standards of management, personnel, regimen, length of stay, social service assistance and, lastly, a central reference bureau to lighten the burden of some of the convalescent homes and to distribute properly cases by type of condition.

Rickets and Cholesterol.—O. Rosenheim and T. A. Webster (*Lancet,* May 16, 1925) conclude: 1. That irradiation of cholesterol with ultraviolet light confers on it definite antirachitic properties, both in the presence and absence of oxygen. 2. Under the particular conditions of their experiments, increasing the time of radiation seems to increase somewhat the amount of antirachitic substance. 3. Taking the content of inorganic phosphorus in the blood as an index, it would appear that the limit of protection against rickets is reached by a dose of 0.2 mg., and this is especially marked in the half hour radiation experiments.

Immunization Against Diphtheria.—Robert A. Strong (*Archives of Pediatrics,* October, 1925) writes that we are faced with the fact that the decrease in mortality due to diphtheria and other communicable diseases has been trifling and regrets the cloud under which immunization against diphtheria has been passing in recent years. He presents the following conclusions at which he has arrived respecting the question: 1. All children should be given some protection against diphtheria, either by the production of an active immunity with toxin-antitoxin, or, 2, if they have not been so immunized, by the production of a passive immunity with antitoxin whenever they are exposed to infection by contact with an active case of diphtheria. 3. Children of the preschool age show a greater susceptibility to infection as evidenced by a very high percentage of positive Schick reactions and they may be immunized as a routine without the preliminary test. 4. Children of the preschool age are more easily immunized with toxin-antitoxin than older children and also show fewer reactions. 5. Children attending schools in the less congested sections of a city or in a rural section show, as a rule, from one hundred to two hundred per cent. more positive Schick reactions than those located in the more congested parts. 6. Repeated exposure to infection with the diphtheria bacillus is an important factor in the development of a socalled natural immunity. This is frequently seen in institution children. 7. Girls show a somewhat larger percentage of positive Schick reactions than boys. This is probably due to the fact that they are less exposed. 8. The danger of anaphylaxis is less than it was before antitoxin was concentrated and purified. Immunizing doses may be therefore given more often than when this risk was a deterring factor. 9. For the same reason, antitoxin in therapeutic doses should always be given immediately, if the slightest suspicion exists that a throat infection may be diphtheritic. 10. No child should be considered immune or protected until it shows a frankly negative Schick test and this test should not be made until approximately a year has elapsed after the administration of toxin-antitoxin. 11. A passive immunity produced by the administration of antitoxin should not be relied upon as a protective measure for a period longer than three weeks. 12. When, for any reason (asthma or known hypersusceptibility, for example), a child has not been immunized by either method it should be guarded from infection by being removed from the infected home and given the advantage of close observation. It should be cultured as often as necessary and, at the first clinical indication of infection, antitoxin in therapeutic doses given.

FRACTURES

Theory and Treatment of Spiral Fractures.—E. Rixford (*Annals of Surgery,* January, 1925) recommends the following technic: The limb is thoroughly washed with ether, rubbing well with gauze pad and using enough ether, then with alcohol seventy per cent., then painting with picric acid five per cent. in seventy per cent. alcohol. If grain alcohol is used in making the picric acid solution dermatitis is practically avoided. Formaline alcohol should not be used for that will blister. I have seen but one case in more than a thousand where the use of picric acid in grain alcohol has been followed by a popular dermatitis.

A longitudinal incision is made over the spiral portion of the fracture which may readily be determined by the x ray, but on the tibia, as said above, the spiral portion is always in front, which is fortunate, for the incision can be made over the flat anteromedian surface of the bone.

The bone is exposed, but care is taken not to strip up the periosteum, and blood clots, which cover the medulla and the edges of the bone, are carefully preserved *in situ.* Loose chips of bone which lie between the fragments are removed. The fragments are drilled at points which will be opposite each other when the fracture shall have been reduced. A stout wire of annealed silver is threaded through the drill holes, the fracture reduced by traction and prying and pulling with hooks, care being taken not to break off the long tips of the fragments lifting out shreds of periosteum which may lie over the edges of the bone; the wire is drawn taut and twisted and the twisted ends hammered down against the bone out of the way. The wound is closed and the limb put up in some external retentive appliance, a suspension apparatus, Thomas splint or plaster of Paris cast. If plaster of Paris is used, complete fixation of joints above and below should be secured in order to prevent rotatory deformity. The plaster case should be removed in ten or twelve days, the stitches removed, the limb massaged, and the joints moved. One advantage of the use of suspension apparatus over that of plaster is that it permits massage and electrical stimulation of the muscles as with a weak faradic current by which muscle tone is maintained and a greater derivation of blood to the limb is brought about, thereby favoring caluus formation and rapid union.

Fractures of Neck of Femur.—R. Whitman (*Annals of Surgery,* January, 1925) concludes from a series of cases that the abduction treatment, because it is comprehensive in its scope and equally effective for every type of fracture, has raised the most neglected of all fractures to the first place in the therapeutic scale. At the present time the opposition to the general adoption of the abduction treatment is rather of the nature of inertia than of loyalty to the ancient ritual, the chief objection being, apparently, that its application, particularly the adjustment of a secure and comfortable blaster spica, requires more skill and experience than is possessed by the average worker. This proposition, in effect, that incompetence should disqualify the treatment rather than the surgeon, however logical under the old dispensation, is no longer tenable. For traditional authority having been disproved and discredited can no longer assure immunity for inadequacy, inefficiency and neglect.

Fractures of Femur.—H. E. Conwell (*Surgery, Gynecology and Obstetrics,* January, 1925) summarizes his study of cases as follows:

1. Fractures demand great care and judgment on the part of those with competent surgical training.
2. Proper splinting, combating shock, and immediate reduction should be done.
3. All fractured femurs should be hospitalized and treated as a major surgical case.
4. Anteroposterior and lateral röntgen rays should be made, and the type of fracture, muscle pull, and condition of patient should be very carefully studied.
5. An anesthetic should be given in every case if the general condition permits.
6. Treatment with skeletal traction, knee flexion and suspension, with the modification of the Balkan-Blake frame was found very efficient.
7. Frequent checks with the röntgen ray, daily treatment with radiant light, diathermy, massage, and active and passive motion should be carried out from the date of injury until final discharge.
8. The limb should be removed from the splint as soon as enough callus has formed to prevent malposition, and placed in supportive splints, which can be easily removed for daily inspection and treatment of limb.
9. All supportive splints should be removed as soon as possible, and weight bearing allow with the aid of crutches as soon as röntgen ray and physical examination show enough callus formation.
10. Compound fractures should have a thorough débridement, closure of the wound, administration of antitetanus serum; otherwise treatment is the same as for the simple fracture.
11. Circular plaster casts should not be applied.
12. Open reduction should always be avoided until a fair trial with skeletal traction and suspension has been carried out.

Treatment of Wounds in Long Bone Fractures.—F. Beekman (*Surgery, Gynecology and Obstetrics,* January, 1925) draws the following conclusions:

1. The wounds of compound fractures can be roughly divided into two groups, those produced from within out and those from without in.
2. Wounds produced from without in are more apt to be contaminated, and the damage to the various tissues is greater than those produced from within out. Consequently, there is greater possibility of infection following such a wound.
3. No standard type of treatment can be used for the wounds of all compound fractures.
4. The indications for treatment of compound fractures are reduction of the fragments with as little trauma as possible, removal of contaminated and devitalized tissue, the elimination of dead space and the prevention of infection spreading into the wound from the surface.
5. In the simpler types, cleansing of the skin, sterile dressing and immobilization is sufficient. In those with more severe wounds, the above conditions can be brought about best by immediate reduction of the fracture, thorough cleansing and débridement of the wound, obliteration of dead space by means of traction and prevention of surface infection by Carrel-Dakin treatment.
6. In those cases in which infection has been prevented and in which it has bleen possible to cover the bone with soft parts, union at times takes place as in simple fractures.

Fracture Inconsistencies.—F. H. Albee and G. Anopol (*International Journal of Medicine and Surgery,* March, 1925) favor the use of tailor made splints in the form of plaster of Paris, rather than custom made splints in the form of many of the braces frequently employed today. The ignorance of proper plaster of Paris technic accounts for its not being more generally used. Once mastered, it is one of the most important elements of the bone surgeon's armamentarium. As a postoperative dressing, it acts as an efficient hemostatic. This is brought about by proper molding before the plaster is allowed to fully harden.

As regards terminal swelling the limb should be elevated before swelling takes place and not afterward. The wound dressing should never be held in place by a rigid encircling bandage, but by means of the plaster cotton or whatever material is used to protect the limb when applying the plaster, for the reason that the encircling bandage with soft compressible cotton on either side may act as a tourniquet in the event of swelling of the limb.

Fractures of the Neck of the Femur.—R. G. Carothers (*International Journal of Medicine and Surgery,* May, 1925) says that there is no treatment yet devised which will save all these people and give them perfect limbs, but we believe the Whitman spica most nearly fulfills the requirements in these cases and is the most comfortable to the patient and the easiest in which to nurse him. Our results have improved considerably with the increase in skill which we have acquired in putting on these spicas, so that we now believe that our greatest difficulty with these cases lies after the third month. The active patients want to walk early; we have had them do this and refracture their hips or severely strain the union and cause more shortening. The older people sometimes require a great deal of urging before they will use the leg even when it is safer to do so, but these difficulties will arise no matter what treatment is instituted, and can only be handled by a closer personal touch with each individual case. When it is possible to keep the patient in a hospital or where his home is conveniently enough located, so that physical therapy, such as baking, massage and diathermy, may be carried out, these difficulties are reduced until they are almost nil.

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Medicolegal Notes.

HOSPITAL RECORDS AS EVIDENCE

The Michigan Supreme Court holds, Metropolitan Life Ins. Co. v. Dabridka, 232 Mich. 36, 204 N. W. 771, that, there being no state statute permitting hospital records to be used as original evidence, such records were not admissible where the witnesses who testified that they were records of the case had no personal knowledge relative to them, and there was no proof that the person who made them, or the doctor or other person who directed the entries to be made, might not have been produced as a witness, or that the records were made in the ordinary course of the business conducted by the hospital by a person whose duty it was to make them.

HYPOTHETICAL QUESTIONS AS TO TESTAMENTARY CAPACITY

The Minnesota Supreme Court holds, In re Weber's Estate, 204 N. W. 52, that the opinion of medical experts on the testamentary capacity of a testator is admissible in a will case to aid the jury, and a hypothetical question to obtain such opinion "may be framed upon as favorable a view of the facts as the testimony for the party propounding the question may warrant. If not so framed, the objector should call attention to facts omitted or overstated, for it is difficult for the court as well as opposing counsel to have all the testimony in mind."

POSSESSION OF NARCOTICS UNLAWFULLY ACQUIRED AN OFFENSE

The Washington Supreme Court holds, State v. Radford 236 Pac. 804, that the state drug act, Laws 1923, p. 133, §3 et seq. make the following acts criminal: 1, To sell, furnish, or dispose of such drugs; 2, to have in possession such drugs unless they were lawfully required; 3, to have them in possession unless lawfully obtained. The defendant was charged under the last classification with being in possession of drugs which he had unlawfully acquired. It is held that it is not necessary in order to convict a person who had unlawfully obtained drugs and had them in his possession, that it must further appear that he intended to sell, furnish or dispose of them.

PROOF OF REASONABLE VALUE OF PHYSICIAN'S SERVICES

In an action by a physician for compensation for his services, the Arizona Supreme Court held, Maryland Casualty Co. v. Sweek, 236 Pac. 720, that it was error to admit the testimony of another physician as to what he charged for similar operations, since reasonable value is proved by the general customary charges for similar services, and not by what some particular person charges, and the witness stated he did not know the general custom.

The plaintiff alleged a promise to pay the reasonable value of his services, which he alleged to be $474. The defendants alleged a definite agreement to perform the operation for $150. The jury, on conflicting evidence, found there was no agreement as to the price, and returned a verdict of $400 in favor of defendant. Since none of the witnesses fixed the value of the services at less than the amount of the verdict, while some of them were considerably higher, it was held that the erroneous admission of the physician's testimony as to his charges was not reversible error.

LIMITED AND FULL SANIPRACTIC LICENSES IN WASHINGTON

The Washington Supreme Court holds that a license to practice is not a contract, but the right to practise is a valuable property right. It also holds, State v. Maybury, 236 Pac. 566, that where a sanipractic who had a limited license to practice drugless healing applied for and was granted a full sanipractic license, when he was required to surrender his limited license, and the full license was afterwards revoked under Laws of Washington 1925, c. 10, providing for revocation after a hearing before the license department as to whether the qualification on which the full license was issued had been properly secured, the sanipractor was entitled to the return of his limited license, his failure to be entitled to the full license being caused by lack of additional qualifications, which did not affect his right to a limited license.

REGISTRATION OF HOSPITAL NURSES

The New Jersey Supreme Court holds, Castellini v. New Jersey State Board of Examiners of Nurses, 128 Atl. 544, that a graduate of a hospital nursing school who is eligible for registration without examination on application within two years after the passage of P. L. 1923, p. 261, §6, cannot be denied registration because the hospital has a daily average of less than fifty patients, that being the requirement under §5, for nurses who must undergo examination before being eligible for registration.

DEGREE OF CARE AND SKILL REQUIRED

The New Jersey Court of Errors and Appeals holds, Lolli v. Gray, 128 Atl. 256, where the chief question was the advisability of protecting the bandages on an injured leg from infection by means of a rubber cloth, that a physician and surgeon, in the absence of express contract, is only required to exercise the skill and care ordinarily possessed and exercised by others in the profession; and a judgment for plaintiff was reversed for a new trial.

TOOL GRINDER'S CONSUMPTION HELD COMPENSABLE

Under section 11 of the Connecticut Workmen's Compensation Act, "injury" includes any disease due to causes peculiar to the occupation and which is not of a contagious, communicable or mental nature. Where a claimant's work as a tool grinder injured him by producing a condition of the lungs which offered weakened resistance to either staphylococcus infection, or streptococcus infection, or infection from the tubercle bacilli, the Connecticut Supreme Court of Errors held, Kovaliski v. Collins Co., 128 Atl. 288, that the injury was the condition of weakened existence to infection, whether that condition has a distinctive name, as pneumoconiosis, or not, and when that condition of weakened resistance yields to infection and makes the workmen unfit to work, the injury has become compensable.

It was also held that the fact that grinder's consumption, resulting from infection by the tubercle bacilli, is communicable, did not bar recovery under section 11, it being the weakened resistance to infection which is the injury compensated for, which weakened resistance is not contagious nor communicable.

SPECIALISTS' FEE INCLUDED IN MEDICAL AID

In a proceeding for compensation for lacerated wounds on the face affecting the right eye, the claimant asked the medical services of a specialist in addition to the first aid by a local physician, allowed by the Commission. The Minnesota Supreme Court, Baker v. Rundquist, 203 N. W. 452, held that he was entitled to the additional services. The court said: "The physician giving the first aid treatment was not a specialist and gave treatment only for the superficial wounds. The specialist gave treatment and he thought it was needed. The workman was entitled to exploratory treatment, and perhaps to all that he received."

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Observations from a Clinical Study of 401 Patients with Cardiovalvular Defects*

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New York

In this paper there is no attempt at a complete statistical analysis of the 401 cases from which the material is drawn. There are, however, certain features of sufficient interest and importance to warrant emphasis. Exhaustive statistical studies on valvular heart disease have been published, the substance of which is repeatedly mentioned in standard works on the subject. But there is a surprising lack of critical analysis in many of these papers. As a result of these studies, our prognostic standards in heart disease were a little distorted until Mackenzie and others established a saner cardiac philosophy. Although in this paper I discuss valvular defects, it is understood that these defects do not constitute a disease per se; that, as the French say, *"Une maladie des valvules n'est pas une maladie du coeur."* But for academic reasons, we still speak of chronic cardiovalvular disease.

During 1922 to 1924 inclusive, there were 401 cases of chronic cardiovalvular disease discharged from the Montefiore Hospital; of these sixteen or 3.9 per cent. were attributable to syphilitic infection, 199 or 49.8 per cent. to rheumatic infections and in 186 or 46.3 per cent. the exact etiological factors could not be determined. The criteria for classifying a case as rheumatic are, 1, a positive history of rheumatic infection, 2, absence of a positive Wassermann or a history of lues, and 3, absence of arteriosclerosis.

In analyzing the cases of heart disease in Montefiore Hospital from 1914 to 1921 inclusive, and 1922 to 1924 inclusive, we find

	Boas 1914-1921	*Perla* 1922-1924
Patients with valvular disease	536	401
	Per cent.	*Per cent.*
Pure aortic insufficiency	6.3	3.7
Combined mitral and aortic disease	20.9	24.4
Mitral disease	72.8	71.9
Patients with aortic insufficiency alone or combined with other lesions	146	113
	Per cent.	*Per cent.*
Rheumatic	77.4	47.9
Syphilitic	7.2	14.1
Arteriosclerotic	14.4	0.0
Undetermined (including arteriosclerosis)	0.0	38.0

The number of the various valvular defects is quite comparable to the figures in the collected tables of Jürgensen. (1) Uncomplicated mitral lesions comprise more than sixty per cent. of all valvular defects; uncomplicated aortic lesions, however, only about three per cent.

TABLE I

Age	*Aortic Insuff.* R.[1]	U.[2]	S.[3]	*Mitral Insuff.* R.	U.	S.	*Aortic Sten.* R.	U.	S.	*Mitral Sten. & Insuff.* R.	U.	S.	*Aortic & Mitral Disease* R.	U.	S.	*Mitral & Tr. Insuff.* R.	U.	S.	*Total*
0																			
10	..	..	..	4	..	..	..	..	..	4	..	..	3	..	..	..	..	..	11
11																			
20	..	..	..	6	..	..	..	..	..	32	..	..	17	..	..	3	..	..	58
21																			
30	..	..	..	..	..	..	..	..	..	8	..	..	9	..	..	2	..	..	19
31																			
40	..	..	2	3	..	..	..	..	..	27	..	..	2	..	..	1	..	..	35
41																			
50	..	..	3	7	9	2	..	..	..	17	..	..	9	1	3	3	..	..	54
51																			
60	..	2	1	3	47	..	1	..	..	24	5	..	7	11	1	3	..	..	105
61																			
70	..	3	1	4	47	..	..	..	..	2	15	..	..	11	1	..	..	..	84
71																			
80	..	3	..	..	14	..	..	..	..	..	1	..	..	7	1	..	..	..	26
81																			
90	..	..	..	..	4	..	..	..	..	..	1	..	..	4	..	..	..	..	9
Total	..	8	7	27	121	2	1	..	..	114	22	..	47	34	6	12	..	..	401

Table I.—Age Groups and Type of Valvular Lesion.
1. R.—Rheumatic.
2. U.—Undetermined etiology (including arteriosclerosis).
3. S.—Syphilitic.

	Total	*Mitr.*	*Aort.*	*Pulm.*	*Tricu.*	*M. and Tr.*	*M. and A.*	*M.T. and A.*	*A. and Tr.*
Nothnägel (Jürgensen)	2470	1616	457	56	10	45	224	24	2
Perla.....	401	285	16	0	0	6	88	6	0

1. SYPHILIS

The low percentage of luetic cases is striking and indicates that this type of cardiac disease is uncommon among the Jews. Boas (2) found the incidence of positive Wassermann reactions in a series of 559 Jewish patients to be 6.2 per cent. for males and 2.4 per cent. for females. This must be considered in evaluating the significance of the frequency of syphilis as a cause of valvular disease. The sixteen cases all presented signs of aortic insufficiency. In the total series, aortic insufficiency was present 113 times. Of these 14.1 per cent. were luetic, forty-three or thirty-eight per cent. were arteriosclerotic or of undetermined etiology and fifty-four or 47.9 per cent. were rheumatic. This is in striking contrast to the findings of other observers. Hubert (3) in Romberg's clinic found that of the cases of aortic insufficiency sixty-seven per cent. were syphilitic, seventeen per cent. rheumatic, 5.5 per cent. arteriosclerotic. Of 182 cases of aortic insufficiency which Longcope (4) collected from the literature, 74.1 per

*From the Medical Division of Montefiore Hospital, July 1, 1925.

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cent. were luetic. Broomhead (5) found 58.7 per cent. of 121 cases of aortic insufficiency syphilitic, 41.3 per cent. rheumatic. Boas in studying the 536 cases of valvular heart disease admitted to Montefiore Hospital during the period of 1914 to 1921 found 77.4 per cent. rheumatic, 14.4 per cent. arteriosclerotic and 8.2 per cent. luetic.

Ormbarg (6) found in a large clinic in Christiania, Norway that of a series of 577 cases only 8.1 per cent. were definitely syphilitic, although of 314 cases 14.3 per cent. gave a history of syphilis. Although higher than the figures of Boas or of the present series, it is strikingly low in contrast to what other observers have found. Since syphilitic heart disease is often of short duration after the appearance of symptoms, the patient may not live long enough to reach a hospital for chronic diseases. He is ambulatory for some time; dissolution frequently occurs within a few months after the onset of severe symptoms and the patient dies in the general hospital. Nevertheless, I am inclined to agree with Boas that the incidence of syphilis as a cause of valvular disease (generally aortic) is overestimated.

2. UNDETERMINED GROUP

After a careful analysis of the cases included in the arteriosclerotic group, it was found that a diagnosis of arteriosclerosis of a heart valve was generally made on insufficient evidence, that often the age of the patient or the presence of peripheral arteriosclerosis was sufficient to term a concomitant cardiac murmur as arteriosclerotic in origin. When one considers the relative infrequency of actual pathological deformation of the mitral valve, it is evident that too often a relative mitral insufficiency due to a dilatation of the orifice is clinically attributed to arteriosclerotic valvular disease. Of course in a frank case of diffuse arteriosclerosis where x ray reveals calcification of the aorta, it is presumptive evidence that the etiological factor in a concomitant valvular disease is arteriosclerosis (where no autopsy is obtainable). Many of the so-called arteriosclerotic cases are obviously therefore not entirely or in part of arteriosclerotic origin. Anitschkow believes that an old healed rheumatic valvular lesion may thoroughly simulate an arteriosclerotic process. Boas and I (7) have pointed out that arteriosclerosis of the mitral ring is a characteristic pathologic finding in arteriosclerotic mitral stenosis. However, a large number of mitral stenoses in the later periods of life, even in the presence of general arteriosclerosis may be of ancient rheumatic origin. It is highly probable that minute rheumatic valvular lesions may form the nucleus for a later arteriosclerotic change, the avascularity encouraging sclerosis. This has been more fully discussed in another paper. The percentage of arteriosclerotic defects is high of course in any series that includes so great a number of older people.

Ormbarg found arteriosclerosis the etiological factor in 7.8 per cent. of all the valvular defects in his series—Eishhard (8) in 12.5 per cent., Stintzing (9) in fifteen per cent., Mengel (10) in twelve per cent., Gerhardt (11) in nine per cent., and Admuhler (12) in only 3.7 per cent. In the series under discussion, I was unable to arrive at a definite estimate of the exact number of cases that are due to arteriosclerosis, though the case records show over forty per cent. After deducting those due to a relative mitral insufficiency and those on a probable rheumatic basis, probably less than twenty per cent. are definitely arteriosclerotic. However, I have placed these with all the doubtful cases in the undetermined group. Aortic insufficiency comprised twenty-three per cent. of the undetermined group while sixty-one per cent. had mitral insufficiency and sixteen per cent. mitral stenosis.

3. RHEUMATIC GROUP

The rheumatic group affords considerable interest. We are dealing with a relatively older group than is found in the general hospital. The age groups in the table below reveal the striking facts that fifty-three per cent. were in adults over thirty, thirty-four per cent. over forty, and seventeen per cent. over fifty. In part, this is accounted for by the fact that our cases are of the older groups. To speak therefore, of rheumatic valvular disease as a disease of youth and early adult life is to overlook a large group of cases that survive unnoticed and untroubled until late in life.

RHEUMATIC HISTORY

Many of these cases, however, developed their infection early in life. A history of acute articular rheumatism was given in thirty-nine per cent. of the cases, of chorea in nine per cent., of tonsilitis in twenty-five per cent. giving a total of 112 or fifty-six per cent. of all C. R. C. V. D. cases with a positive rheumatic history.

TABLE II

Age Groups in C. R. C. V. D. Cases at Time of Admission to Hospital

Ages	*Males*	*Per cent*	*Females*	*Per cent*	*Total of Each Gr.*	*Per cent of total No. of cases*
1-10	10	5	4	2	14	7
11-20	31	16	30	15	61	31
21-30	7	3	12	6	19	9
31-40	18	9	19	9	37	19
41-50	13	7	21	11	34	17
51-60	9	4	23	12	32	16
61-70	0	0	2	1	2	1
Total	88	44	111	56	199	100

The most frequent valvular disease of this group was mitral stenosis. There were 147 or seventy-four per cent. cases of mitral stenosis with and without other valvular defects. It is interesting that in six of these there was a complicating hypertension.

TABLE 3. C. R. C. V. D.

		Percent
Mitral stenosis	147	
With mitral insufficiency	139	94
With aortic insufficiency	44	31
With aortic stenosis	6	4
With tricuspid lesions	9	6
With pulmonary insufficiency	2	1
With hypertension	6	4
With atherosclerosis of pulmonary vessels	1	7
With subacute bact. endocarditis	1	7

The presence of a presystolic murmur in cases of hypertension with enlargement of the left ventricle may be due to a relative mitral stenosis and not to an organic valvular defect. In the presence of hypertension, the diagnosis of organic mitral stenosis must be made with caution.

TABLE 4. C. R. C. V. D.

	No. cases	*Per cent*
Aortic insufficiency	64	
With mitral insufficiency	56	87
With mitral stenosis	50	78
With aortic stenosis	18	28
With tricuspid insufficiency	2	3
With tricuspid stenosis	2	3
With hypertension	7	10

PALPABLE SPLEEN

It is generally believed that the spleen is not enlarged in chronic rheumatic-valvular infections in

the absence of subacute bacterial endocarditis or of infarction. J. E. Talley and W. H. Lindsey (13) report palpable spleens in three per cent. of 198 adults and in six per cent. of eighty-eight children with chronic valvular disease. They attribute it to chronic passive congestion. J. H. Arnett (14) found the spleen often enlarged in patients who had died in acute or recurring endocarditis, and the enlargement was independent of any liver enlargement. He attributes this entirely to infection.

In our series of 199 cases of chronic rheumatic valvular disease, twenty-four had a palpable spleen. About twelve per cent. of each of the age groups, one-ten, eleven-twenty and twenty-one and over, had a palpable spleen. Of the twenty-four cases, ten cases had auricular fibrillation at the time of examination. Malaria and other causes of splenomegaly were ruled out. A few occurred secondary to infarction in cases of fibrillation of the auricles. Only three of the cases, however, with a clinically palpable spleen came to autopsy. Of these two were not above the normal weight. The third, a man of fifty-six with a mitral stenosis of rheumatic origin complicated by a general arteriosclerosis with a moderate cirrhosis of the liver and a myocardial failure with a diffuse anasarca had a large firm spleen. The capsule was thick, the malpighian bodies appeared of average size, but microscopically the sections showed peculiar germinal centers outside the vessel walls in the malpighian germinal follicles. There was an accumulation of epitheliod like monocytes and recent large lymphocytes in a loose stroma of fibrillar connective tissue. The rest of the malpighian corpuscle was normal. There was a moderate congestion in the spleen. I do not believe the splenic enlargement was dependent on the cirrhosis of the liver. Nevertheless, a palpable spleen can be demonstrated clinically with considerable frequency in valvular disease in the presence of chronic rheumatic infection. Its pathogenesis is unknown.

Relation of fever to decompensation in chronic rheumatic cardiovalvular disease.

In reviewing the cases of myocardial insufficiency, it was found that in thirty-five cases of chronic rheumatic cardio-valvular disease with marked evidence of myocardial failure, sixty per cent. had a subnormal temperature during the period of decompensation; twenty-one per cent. had a temperature that stayed within normal limits; and twenty per cent. had slight irregular fever. The occurrence of infarcts and of secondary intercurrent acute infections as broncho pneumonia was, of course, not included. In the presence of circulatory failure, it is to be expected that the temperature of less vital structures is lower than normal. It is lowest in the early morning hours. The impairment of the ventricular output results in the failure of the circulation to maintain uniform normal temperature in the peripheral parts of the body.

4. CARDIAC IRREGULARITIES

The frequency of cardiac irregularities is greater in this series because of the marked extent of myocardial damage prevalent in many of our cases. Auricular fibrillation occurred in 112 or twenty-nine per cent. of the cases. Of these seventy-eight per cent. were in the rheumatic group, twenty per cent. in the undetermined group, one and five tenths per cent. in the syphilitic group. Fifty-seven per cent. of all cases of auricular fibrillation occurred in mitral stenosis.

TABLE 5. CARDIAC IRREGULARITIES

		Per cent.
Total C. C. V. D. cases	401	
Paroxysmal tachycardia	3	.8
Auricular fibrillation	112	29.
Heart block	6	1.5
Bundle branch block	3	.8
Arborization block	5	1.
Auricular flutter	3	.8

TABLE 6. AURICULAR FIBRILLATION

Etiology of Valvular Disease	*Total Cases*	*Auricular Number*	*Fibrillation Per cent.*
Rheumatic	199	88	44.2
Syphilitic	16	2	12.5
Undetermined (including arteriosclerosis)	186	22	11.8
Total	401	112	29.0

5. PROGNOSIS IN C. R. C. V. D.

The prognosis in the rheumatic group is better than is generally believed. Thormeyer (15) compiled statistics on 122 cases of heart disease with the exact history and necropsy findings. The average time of compensation was over thirty-three and one half years when the rheumatic infection had been acquired between the ages of one and twenty years. It was fourteen and one half years in patients with the rheumatic infection acquired between twenty-one and thirty, and only five and six tenths years if they had acquired it between thirty-one and forty. The average interval between the first and second phases of decompensation was four years in mitral insufficiency and about eight months in aortic insufficiency. This, however, is a selected series, for those who died early in life are manifestly omitted. In general we have found that if myocardial insufficiency occurs before puberity, the outlook is poor, although we have one case that has been more or less continuously decompensated for fourteen years. If, however, the patient survives the adolescent period without myocardial failure, the outlook is much brighter.

The prognosis in valvular defects depends, of course, on 1, the presence of infection; 2, the condition of the myocardium; 3, the presence of irregularities, particularly auricular fibrillation; and 4, the degree of physical activity of the patient. The severity of the valvular lesion is of lesser importance. Twenty-five per cent. of the 199 rheumatic heart patients died under observation. Of these, thirty-seven per cent. were under twenty, thirty per cent. between thirty and fifty, and twenty-three per cent. over fifty. Mitral stenosis alone or with other valvular defects was present in forty-four of the forty-eight fatal cases.

TABLE 7. AGE AT DEATH IN C. R. C. V. D.

Age	*M.I.*	*M.S.&I.*	*A.I.*	*A.S.*	*M.&A.*	*M.S. T.I.*	*M.S.A. I.T.I.*	*Total*
1-10	..	2	..	..	3	..	..	5
11-20	1	6	..	..	3	3	..	13
21-30	..	2	..	..	1	..	1	4
31-40	..	5	..	..	2	1	..	8
41-50	2	1	..	..	5	..	..	8
51-60	..	6	..	..	2	2	..	10
								48

No patient with pure aortic disease died under observation. In fifty per cent. of the cases that died, the auricles were fibrillating.

The duration of the disease in the rheumatic group was difficult to estimate. In those cases in whom the onset was apparently between one and ten, the average duration of life from the time of onset of heart disease to death was 11.8 years, although it varied from one to thirty-six years. In the eleven to twenty group, the range was from two to twenty-eight years, the average being 9.1 years; in the twenty-one to thirty group, the range was from six to fifteen years, the average being 8.6 years; in the thirty-one to forty group, the average was 9.1 years; forty-one to fifty group, 8.1 years, and the fifty-one to sixty group, 4.6 years. The following table indicates the duration of life in these cases. Many deaths were not due to cardiac failure but to an intercurrent infection.

TABLE 8. DURATION OF LIFE AFTER ONSET

Age of Onset	*No. cases*	*Range of Duration Years*	*Average Duration Years*	*Remarks*
1-10	5	1-36	11.8	1 died of bronchial pneumonia 1 died of acute bacterial endocarditis 1 died of subacute bacterial endocarditis 1 died of lobar pneumonia
11-20	13	2-28	9.1	1 died of uremia 1 died of lobar pneumonia
21-30	14	6-15	8.6	1 died of acute bacterial endocarditis
31-40	8	3-20	9.1	
41-50	8	3-15	8.1	
51-60	10	4-5	4.5	

It is interesting however to note that among those still alive, nine patients in whom the disease commenced under twenty had had the valvular defect twenty years or more at time of discharge.

Mackenzie has seen many patients with mitral stenosis reach extreme old age without symptoms. In our series of fifty cases of mitral stenosis in adults over fifty years, many had had no symptoms although many undoubtedly had had the valvular defect since childhood. As is evidenced by this study and as has long been known, it is the state of the cardiac muscle which determines survival and activity.

CONCLUSIONS

1. The incidence of syphilis as a cause of valvular disease (generally aortic) is overestimated.

2. Mitral stenosis in patients over fifty years of age is not uncommon. Clinically it is often difficult to determine the etiology of valvular defects in older patients.

3. In the rheumatic group, fifty-three per cent. were in adults over thirty, seventeen per cent. in adults over fifty. Fifty-seven per cent. of the patients with chronic rheumatic cardiovalvular disease gave a positive history of rheumatic infection. The most frequent valvular defect of this group is mitral stenosis.

4. A palpable spleen in chronic rheumatic cardiovalvular disease in the absence of infarction and subacute bacterial endocarditis is not uncommon. It was found in twelve per cent. of our cases.

5. In the presence of myocardial insufficiency, in the absence of secondary infection or infarcts, the temperature is generally subnormal.

6. Auricular fibrillation occurs more frequently with mitral stenosis than with other lesions, and in rheumatic cases more frequently than in the other groups.

7. The prognosis of cardiovalvular disease depends on 1, presence or absence of infection; 2, state of the myocardium; 3, the presence or absence of auricular fibrillation, and 4, the degree of physical activity of the patient. The duration of life from the time of onset is longest if the disease is acquired under twenty, provided the patient survives early reinfection. In general, the prognosis in well compensated cases is far brighter than is generally believed. Many reach old age with their valvular defects. A defect of the valves is not disease of the heart.

The author's references will appear in his reprints.

European School Hygiene and Other Notes

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In modern social life the school hygiene service holds an important place in big cities. Its aim is to increase the health of the school children. It does this principally by a periodical examination of each child, thus finding the unhealthy ones. The parents of these are advised of the means for health improvement. Also an unceasing watch is kept up for the contagious diseases. Children with these diseases are immediately excluded from school and thus much ill health is prevented.

The school hygiene service consists of teachers, school nurses and school doctors all working together for a single aim, the health of the school child. Their work is rendered effective by the essential cooperation of the parents, easily obtained as a rule, for every parent seeks the welfare of its child. While the principles upon which school hygiene are based are quite the same in all large cities, there are variations in the methods employed in getting results that merit investigation. Indeed we may consider school hygiene service as a phase of social progress that is in the evolutive stage. This makes a study of the school hygiene services in various countries interesting and instructive.

While in Europe during the past summer, I had the privilege of examining the school hygiene service in Frankfort, Vienna, Paris, and London, with an eye in particular for observing the care given to the problem of epilepsy in school children.

Dr. Schlosser, the Health Commissioner of Frankfort, is also Director of School Hygiene. I visited him in the Rathaus, after my desire to examine this department had been made known to him by Dr. Groebel, the eminent heart specialist of Bad Nauheim. I told Dr. Schlosser that I was especially interested in the care given to epileptic school children. I learned through him that there are about 50,000 children in the public schools of Frankfort. Their

health is looked after by fifteen school doctors, and three specialists; otologist, ophthalmologist, and neurologist. The latter diagnoses the cases of epilepsy among the school children, by observation and the history of the case. He also determines which children shall be placed in the mentally backward classes, each of which consists of fifteen to twenty children. There are three schools occupied by these mentally backward children, each school having about three hundred. Every school is visited twice a week by the school doctor. The children are examined upon their entrance to school life, in their fifth year in the schools and again in their last year of school. Dr. Schlosser gave me this information through Miss Gross, the special nurse connected with the health department, who served as interpreter, and he then kindly directed her to assist me in every way to gain a knowledge of the service. She presented me with a set of the forms used by the doctors and teachers in their school hygiene service, and explained in detail their use.

A unique feature of this service that appealed especially to me, is that at the psychiatry clinic of the University (it will be remembered that the Frankfort University is the seat of learning where Professor Ehrlich taught) and situated within the city limits, there are twenty-five beds set aside for cases of chronic epilepsy and other mental disease in school children. These children have a school room and a special teacher, and a playground. The pleasant doctor in charge, a young woman, showed me several patients with chronic epilepsy and a case of encephalitis lethargica. Miss Gross informed me that this special school with hospital care for these cases had been established more than four years. This shows that Frankfort is on the advance line in school hygiene; and a similar provision for such unfortunate children might well be established in our own city. Another feature of the hygiene service in Frankfort is the care taken to prevent tuberculosis and deformities from wrecking the lives of school children. There are six stations where sun and air baths are given to children certified by the school doctors; and children who need treatment for spinal curvature, round shoulders, etc., are sent likewise certified to the orthopedic clinic. Also, as a preventative measure, a provision is made that poor families can get sufficient milk for school children at half price, the town paying the difference.

VIENNA

In Vienna, the school hygiene service is under the direction of the health commissioner, Dr. Boehm, a fine large, big hearted man, whose characteristics reminded me very much of our Boston health commissioner Dr. Mahoney. I was introduced to Dr. Boehm by the genial Dr. Foramitti of the health department, who had visited Boston a few months previously. Dr. Boehm told me that in 1910 Vienna had a population of 2,100,000; now it is 1,860,000. The number of children in the city's five hundred schools is now 150,000, while before the war their number was 242,000. There are seven full time school doctors, and thirty-five part time. All are under one central inspector in Dr. Boehm's office. The number of nurses is 169, for the schools' and child health service. Each part time doctor visits eleven to twelve schools, contining in all 2,000 to 4,000 pupils; and each full time doctor has twelve to sixteen schools in his charge, containing 3,900 to 5,000 children. The schools are visited once a week. The full time doctors carry out the health service in the kindergartens also. There are three specialists connected with the Board of Health, eye, ear, and orthopedic. The school doctor refers such pupils as he deems desirable to these specialists. The specialist certifies to the condition found present and writes on the certificate what he deems advisable for each child examined. The hospitals and clinics of Vienna are world famous, being in charge of men devoted to medical research. One of these is the von Pirquet Children's Hospital. I visited it hoping to meet Professor von Pirquet; but he was absent on a brief vacation, and his first assistant, Dr. Noble, graciously received me and invited me to make the rounds of the hospital with him and his post graduate men. On my expressing a desire to demonstrate the objective signs of epilepsy, the white spots and epileptic skin reactions, he said there was in one of the wards a luetic girl that had convulsions that might serve my purpose. Dr. Noble then commenced his visit to the wards which I shall briefly describe. First there was the exanthemata ward. This was glassed in, so that in passing through a corridor the students could study the patients without the danger of spreading infection. Before entering the infants' wards, all of us had to don a long white garment, since, it was explained to us, infants were particularly susceptible to infections. The open air ward, on a roof, gave a wonderful demonstration of tubercular children well tanned and nourished, all on the road to complete restoration to health. They were doing their calisthenics when we visited them. In another ward were children very sick with lung diseases. In some cases immobilization of the lung by nitrogen gas is employed, the method first employed by our brilliant American surgeon, the late John B. Murphy. When we reached the bed occupied by the luetic girl, Dr. Noble invited me to demonstrate my findings in epilepsy and vasomotor tester. The epileptic skin reactions were found present. Mr. MacKahnn of the Boston Children's Hospital was present, also a guest of Dr. Noble. Afterwards I visited Dr. Lazar and Dr. Theresa Bettleheim Stein in the out patient department. They were much interested in the work done in the Boston Forsyth clinic in diagnosing and curing epilepsy in children, and in the photographs of the white spots of epilepsy taken at the Forsyth.

I had told Dr. Foramitti that I desired to meet University Professor Josef Wiesel, whose research work on status lymphaticus is known among medical men the world over. I was delighted, therefore, to receive an appointment to meet Professor Wiesel at the Franz Josef Spital, where he teaches internal medicine. Wiesel is a handsome man, with bushy black hair and a magnificent profile. In his work on status lymphaticus he showed that there is always present a hypoplasia of the chromaffin tissue in the body. It is the chromaffin tissue that furnishes adrenalin to the blood, and to lack of it Wiesel attributes the sudden death. I reported to Professor Wiesel that I had written a paper some six or seven years ago on the Mechanism of Death in Status Lymphaticus, in which it was shown from experimentation on the vasoconstriction reflex that this death was due

to insufficient adrenalin in the blood stream; but that I had refrained from publishing the paper because I was not assured of the condition of the heart in this death, whether the heart was in diastole or not. Professor Wiesel told me it is "invariably in diastole"; as this caps with conviction the conclusion reached in the paper, I shall shortly publish it. Later in the day, on meeting my fellow townsman, Dr. MacKahnn, I told him of my conversation with Professor Wiesel; and apropos of the subject MacKahnn said: "A year ago I treated a child with status lymphaticus, in collapse at operation. I injected three minims of adrenalin solution into its heart chamber. The child is alive today."

Insufficiency of adrenalin in the blood stream I believe can be easily determined by the use of my vasomotor tester; the tester is drawn over the skin of the cheeks and forearms, and if there is no resultant reflex, or if it is weak, there is insufficient adrenalin in the blood stream. In such a case a subcutaneous injection of adrenalin should be given before an operation. This reference to status lymphaticus is quite a digression but the importance of the subject warrants it.

PARIS

On my arrival in Paris a gentleman gave me a letter to Dr. Contet, Medical Inspector of the Schools. He explained to me the working of the school hygiene system and gave me letters of introduction to the Secretary of School Administration (where I obtained copies of the forms used in the service) and to Dr. G. Paul-Boncour, the neurologist in charge of the abnormal children in the Paris schools. By his writings and efforts the detection of early cases of epilepsy in the schools has progressed more than elsewhere in Europe. A reprint of a talk which I gave to the Boston school nurses in 1919 met with his hearty approval, based on his similar work and experience in the schools of Paris. In his book, *Les Anomalies Mentales chez Les Ecoliers,* are passages that could well be reprinted for the enlightenment of school doctors and school teachers everywhere.

Special attention is also given in the Paris schools to the pretuberculous children, and this is reflected in the forms used in the hygiene service, calling for radiographic investigation of the child's chest in a suspected case. I had hoped while in Paris to pay my respects to Professor Sergent, the eminent clinician at the Charitè, but he was *en vacances;* Dr. Paul Bordet, Chef de Clinique, gave me a card to Dr. Alajouanine, neurologist at the Salpetrière. Through his kindness I had an opportunity to demonstrate the objective signs in epilepsy in the Charcot clinic, in five cases, and also to investigate ten cases of encephalitis lethargica in a ward of the hospital. The Salpetrière strikes the visitor by the extent of its grounds and buildings. At its entrance is a statue of Charcot. It represents him standing, as if teaching, and makes him an impressive figure, the father of modern neurology. I left Paris with regret, the more so because my itinerary prevented my visiting Dr. Simon, one of the pioneers in investigations relating to measurements of the mentality. Some one has said, "See Paris and die." I would change this to "See Paris and see it again." I hope to.

LONDON

These notes touching upon the school hygiene service in Europe have followed the order in which the representative cities were visited, and fittingly they finish with the city with the largest number of school children, London. In it there are over a half million of children in the eight school grades, averaging 65,000 in each grade. Last year 192,000 were examined in the groups required by law; those entering school life, those between seven and eight years, those at twelve years, and those leaving the schools. Besides these regular examinations, there were 41,348 special ones, of "children found ailing by school nurses, children not attending school brought up by the attendance officers, and children upon whom care committees or head teachers required the doctor's advice." Among these specially examined there were found 112 epileptics, and in passing, I note that this gives a ratio of two and seven tenths epileptics in a thousand school children.

Through the kind attentions of Dr. Ralph Williams, H.M.I., on the School Board, I was enabled to learn the working of the hygiene service in London. He was formerly Director of School Hygiene in Sheffield, and in his work has always manifested a special interest in the problems connected with epilepsy in school children. On my expressing a desire to learn particularly of this phase of school hygiene, he introduced me to Dr. F. C. Shrubsall, neurologist to the public schools. This earnest and genial gentleman did everything to make me happy. He had me supplied with a set of forms used in the school hygiene service and explained their use. There are 125 forms, so that a proper record of everything done in the service is provided for. He gave me a copy of the Report of the School Medical Officer [Sir William Hamer] for the year 1924. From it one can glean the immense amount of good done the children of London, by the school hygiene service. A part of this report that will interest neurologists is that relating to the investigation of encephalitis lethargica cases in London school children, by Dr. Shrubsall. There were 119 cases reported upon in 1924. The prominent symptoms were:

1. Sleep impairment, 40.
2. Paresis or paralysis, 6.
3. Twitchings, tremors or "fits," 12.
4. Occular symptoms, 10.
5. Intelligence impaired, 26.
6. Conduct changes, 44, including: a, irritability and impatience, 17; b, excitability, noisiness, restlessness, 12; c, lack of control, destructiveness, spitefulness, and violence, 8; d, stealing, 2; e, other manifestations, e. g., hysteria, obsessions, suicidal tendencies, 4.

Dr. Shrubsall arranged a visit for me to Dr. J. Tylor Fox, superintendent of the Home and School for Epileptic Children, at Lingfield, about twenty-six miles from London. This is a beautiful and practical institution. Dr. Fox, a master in his specialty, is yet an earnest student. He has a winning personality, that fits him for the office of developing these children. I had the privilege of demonstrating to him the objective signs of epilepsy, the white spots and characteristic skin reactions on several of his little patients. I deeply regret that my stay in London was so limited that I had no time to tap the stores of his experience for my own benefit. However, on my return home, I learned by consulting in-

dices of the *British Medical Journal* that he has published *The Care of Sane Epileptic Children* which you may be sure I have ordered from the publishers, J. Bale, Sons and Danielsson, London.

On my arrival in London I got a letter of introduction to an able practitioner there, Dr. Gilbert Orme. When I told him my desire to meet confreres interested in epilepsy research, he took up the phone and called up Sir Aldren Turner's number, and learned he was away on vacation. I was sorry to leave England without paying my respects to this eminent specialist in epilepsy. Dr. Orme then called up the secretary of the Medical Fellowship Association, Miss Roy, and made an appointment for me with her, explaining to her my wishes. She gave me notes of introduction to the authorities connected with the National Hospital for Epileptics, and the Maida Vale Hospital for the Epileptic and Crippled. At the National Hospital for Epileptics I had the privilege to demonstrate the objective signs of epilepsy to Dr. Collier when he was giving clinical instruction to a large group of medical men, among which was a doctor from the antipodes, another from Chicago. The latter introduced himself to me, Dr. Grinker, son of the doctor who introduced the use of luminal for epilepsy, in the U. S. A. Dr. Collier's clear thinking and logical method of teaching explains the popularity of his clinic. At the Maida Vale Hospital I met Dr. Anthony Feiling and sat two hours in his clinic edified and instructed by his manner of treating patients; his gentleness and firmness with them; his lucidity in presenting rapidly the salient features in their histories. I met no clinician in Europe his equal in these respects. It would be a salutary thing for the future careers of undergraduates to sit in this gentleman's clinic and observe. I cannot but contrast his practical ethics with those of a clinical teacher that I chanced to observe, I wont say where. This latter was being consulted by a beautiful young woman about a change in her occupation. Her malady was epilepsy. He advised her to avoid fatigue, very good advice. He then informed her that she would become worse! Though he believed so, what right had he to frighten her with such an opinion. Had he read Tissot, a practical neurologist of the eighteenth century, he would have learned that fright and terror produce epilepsy; he would have learned how that master cured many cases of the disease, and with the knowledge that recent research gives of the pathogeny of epilepsy, he would have taken an optimistic view of his case and set about curing it. This gentleman had no time to witness a demonstration of the objective signs of the disease. Here again his ethics were at fault, for the teacher true to his calling eagerly seeks new light from whatever quarter upon the subject matter he teaches. He owes this up to dateness to the men he trains.

In bringing these notes of a delightful trip to a close, I desire to heartily thank all the officials I met for their many courtesies. The interest awakened in the school hygiene authorities abroad by my report of the research in epilepsy done at the Forsyth clinic in Boston, will doubtless be reflected in the European services by their planning for the early dagnosis and treatment of epilepsy in school children, the time when its cure is easy. I trust the Boston school hygiene service will not rest with laurels in this respect, but will emulate the magnificent work done abroad, and noted above, in the care of the neglected, chronic case of epilepsy in the school children.

The Need of Psychoanalytical Clinics and Institutes in America*

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The progress which has been made in the field of neuropsychiatry within the past two decades has been striking, for largely within this period we have seen the formation of mental clinics for the study and treatment of nervous disorders as a necessary part of the curriculum of the medical school. Their existence as a separate entity, however, in different cities and communities has been one of the important accomplishments of the National Committee of Mental Hygiene. While these mental clinics have aimed to render medical and social service and help the individual to make conscious adaptations, their function has not met the great problem of the neurotic wherein the unconscious motivations of his disorder must be brought to light. It seems highly important in order to meet this urgent issue that clinics be devoted to a more careful research of the unconscious forces that precipitate neuroses. There is but one sovereign method of dealing with these nervous disorders, and that is by psychoanalysis, which has been so excellently developed under the leadership of Freud.

It is a question not yet settled whether clinics for the investigation of unconscious activities should become an integral part of the mental clinics or be an independent institute of investigation. Surprising as it may seem, the modus operandi of psychoanalysis is for the most part opposed to direct suggestion as now offered by the mental clinic. To the end that we make another step forward toward investigating and treating the neurotic with limited means by this newer method, I would most seriously urge that psychoanalytical clinics be formed as an integral part of our armamentarium for advancing the permanent welfare of the nervously ill.

I shall undertake to outline briefly what I consider a pressing neuropsychiatric issue at this time, namely, the need of establishing psychoanalytical clinics or institutes in this country for both therapeutic and didactic purposes. If, in the words of Freud, psychoanalysis possesses in addition to its scientific importance a specific means of treatment and is able to aid suffering humanity in the struggle for realization of its cultural requirements, this assistance should be

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extended to the great mass who are unable to compensate sufficiently the analyst for his arduous labors. The economic burden which a neurosis throws upon the individual and his family is only too well known. Unfortunately the need of such clinics is the more urgent for two reasons: first, to overcome the entrenched opposition to this art and science in the curricula of our medical schools, and secondly, to train a larger number of analysts in whose skill one sees the only protection against quackery in this branch of medical science.

My suggestion is not a novel or unique one. Two such clinics have been in existence for several years in Vienna and Berlin. During my visit to the Ninth International Congress of Psychoanalysts which met in Homburg in September (1925). I had a long conference with the heads of both these clinics, and I was particularly interested in the development of the one in Berlin. In 1918, Freud stated that the time was not far distant when it would be regarded as the urgent duty of the state to give aid to the soul as to any other lifesaving and health promoting agent, and thus psychoanalysis would be made accessible to an increasingly wide circle of peoples in all conditions of life.

The difficulties encountered by Dr. Eitingon and his colleagues to establish the Polyclinic in Berlin are somewhat similar to those experienced in this country. After the World War they found that neurotic disorders had grown without measure and the confidence of the public in psychoanalytical procedure had kept pace with this urgency for relief. Not only had the war demonstrated that the Freudian mechanisms in their most flagrant manifestations were patent to the initiated, but they were almost equally obvious to the unskilled and prejudiced. Under the stress and misery of the war it seemed that a sort of Utopian policy was about to be put into operation, for the government officials apparently were willing to do almost anything to advance the cause of the nervously sick. When the collapse came, however, they not only withdrew their sympathetic support but actually became hostile to all former promises. In this country, immediately after the Armistice, we all know how even the more popular and well established institutions suffered. In many instances their very existence was threatened. In the rapid overturn of politics and policies even a fair degree of progress in scientific research was extremely difficult. It is, perhaps, but a natural heritage of war to expect this attitude to follow in economically depleted countries, but certainly we were not exempt from this calamity, and private means for promoting research, which has always been our strongest point, had to be requisitioned. Under similar arrangements in Berlin psychotherapy continued to advance.

Abroad as well as here the lay and medical public ask the question: How can psychoanalysis ever hope to solve more than a small part of the psychoneurotic problem, with a system of individual treatment and prolonged analysis of the single case? This need not trouble us so greatly if we but follow the wise course of the Berlin psychoanalysts, who did not shrink from even small beginnings and were willing to devote the necessary time to the task. In 1919 the operation of the Berlin Polyclinic began in a moderate way with three assistants and was privately financed over a term of years. Several volunteer assistants were added, but the burden of the work was carried forward by the full time staff. Later the staff increased to seven members who devoted jointly twenty-seven hours daily. This did not include the private analyses of the psychoanalytic union which consisted of a supporting outside group of psychoanalysts as well as analyses made under the clinic's control by the students of the Polyclinic.

In three years the polyclinic found itself pressed for space beyond the five rooms at its disposal. Furthermore the loose or democratic union had to give way to a more consolidated working system under the fixed control of its two founders, Dr. Eitingon and Dr. Simmel. Members of the staff received a fixed remuneration which bore no relationship to the amount of time given or the work actually accomplished.

Directly after opening, twenty analyses were undertaken, and at the outset, as is characteristic in all new mental clinics, many inveterate neurotics for the most part unfavorable for analysis, presented themselves. Soon, however, this class gave way to the more suitable cases, such as conversion hysteria, anxiety states and compulsive neuroses. The intelligent and professional class as well as the lower middle class of working people of all ages came to the clinic. Physicians as well as patients continually recommended the clinic. Patients were seen daily with the exception of one day a week kept for didactic purposes. An attempt to reduce the time of each session to half an hour was abandoned, for there was only a small number of army officials, etc., accustomed to discipline, who were able to cover sufficient ground in the shorter period of analysis. Usually three quarters or the classic full hour was required. The patients came on an average of three or four times a week and were seen oftener in severe cases. One hundred and thirty analyses were carried out, which is indeed an imposing number for such careful and searching analyses as were given, and in 1922 the clinic was able to make a formal report of statistics (1). The question of hastening or shortening the treatment was given constant consideration, but such a plan has met with little success despite zealous employment of the requisite time. The delay in the waitingroom had a favorable influence on patients, for the neurotic realizes that many others are in the same predicament as himself. The lack of interest in the personal material on the part of the analyst strengthens the first position notably and makes much resistance at once threadbare. One circumstance of polyclinic treatment has given many colleagues both within and without the clinic much perturbation, and that is the question of an honorarium. There is the fear that the clinic is endowed with both the means and the opportunity to bring out certain complexes like the analerotic; they have marveled that these fearful patients seem to have missed seeing a very interesting sentence in the Budapest paper by Freud. The latter, who quickly recognizes the slightest malice in the soul of the subject and the most shadowy aggravations of the technic, states in speaking of the institutional psychoanalytical treatment of the future with the sovereign assurance peculiar to him: "This treatment will be without charge." Now the polyclinic has not this principle of "no pay." From prac-

tical and educational reasons the staff desires and expects that the analyzant shall pay, as much or as little as he is able. One man may pay nothing and another may pay well, and it cannot be said that this matter of payment has any influence one way or another on the success of the treatment. If as representative of the institute and again individually the patients who stand in the neurotic constellation are permitted to pay little or nothing, the clinic's analyst plays for a time the "father rôle" and in many cases the "mother rôle"—the rôles, therefore, which the patient forces upon the analyst. This rôle is played until the proper time when the analyst can take this point up with the patient. Up to that moment the analyst rescues or makes possible quite a few analyses which would have been impossible in private practice, and at the same time he broadens the field of those who come for analysis. The clinic does not, of course, come to wholesale therapy, which would be impossible in a polyclinic. We must remember that we are speaking of making analysis more accessible and while Dr. Eitingon believes that all of his staff are highly and justly satisfied with the work of the Polyclinic, he does not look upon the latter as having reached its limits of success although the present results are highly gratifying.

All who have had experience with "fractional analysis" whereby through external circumstances interruptions of the treatment become necessary, find it does no harm provided the analyzant has reached a certain stage of improvement. Since the aims of the clinic are more practical and therapeutic than scientific, in certain cases one may make capital out of this fact and erect a sort of principle. If the patient's condition has improved; if he has through the clearing up of his internal condition gained a large degree of functioning, the analyst can often interrupt his treatment and demand that he profit by what he has already gained. He may and should come back if his gain is not satisfactory. This resumption of treatment often shows that an acceleration of the tempo of improvement is present and he may continue to improve until cured. As Freud states, the most important constituents of analytic treatment will surely remain those which are borrowed from *strict* and *aimless* psychoanalysis.

As the number of patients increased the Polyclinic required an almost continuous increase in the numbers of its staff, and the question arose in regard to training assistants. There was a demand for teaching analysis in order to educate analysts. This was the second aim with which the staff entered upon the foundation of the institute. Introductory lectures and orienting addresses have, of course, already been instituted in most local groups in order to diffuse knowledge of psychoanalysis. The staff at once proceeded to hold regular and systematic instruction and education by courses. With Dr. Abraham at the head, Dr. Eitingon with his colleagues Dr. Simmel and Dr. Sachs, supported by the staff fellows Dr. Horney and Dr. Liebermann, there was formed a small teaching body for carrying out an educational program which embraced the following subjects: An introductory course in psychoanalysis; a psychoanalytical seminary for the advanced student; an introductory course on "experiences from psychoanalytical practice." During the course Dr. Sachs brought up the question of the application of psychoanalysis to the mental sciences; the theory of dream interpretation; the technic of dream interpretation, sexual problems of psychoanalytical practice; and held seminaristic exercises on the application of psychoanalysis. Dr. Horney and Dr. Simmel spoke on the psychoanalytical viewpoints for the medical practitioner and Dr. Simmel also on psychoanalytical technic. Dr. Eitingon held alone or jointly with Dr. Simmel three or four times a year a practical course without time limits on the introduction to psychoanalytical therapy. Here the pupils who were to learn analysis must have already completed self-analyses, but in the case of practitioners of medicine this was omitted, for their only desire was some orientation in a subject which they did not intend to practise.

It is a firm and all too well founded conviction that no person who has not been analyzed should become a member of the ranks of practising psychoanalysts. Passive selfanalysis takes a decisive place in the education of the analyst and is given in the latter part of the course after intensive theoretic preparation by lectures and courses. In regard to selfanalysis it was made further possible by the activity of Dr. Sachs who was called to the polyclinic to conduct didactic analyses among the patients.

The number of pupils analyzed wholly or partly as part of their training during the two years 1920-1922 was twenty-five, comprising thirteen men physicians, five women physicians, one medical student, five teachers or others who wished to make professional use of analysis and one woman student of ethnology. Of the twenty-five, nine were from outside of Germany, as follows: one Austrian, four Hungarians, one Hollander, one American, two Englishmen. Of the twenty-five only eight had previously studied analysis and four of these were members of the local Berlin group while ten were standing guests of the same. Thirteen were analysts, one for children only. Two who were analyzed became members of the staff after completion of their course. A particularly important part of the managed course of instruction was the work of the polyclinic, which was something new in psychoanalysis. It was not easy to find the best way to conduct this work, although apparently there was but one way available. Whatever seemed venturesome was modified by increasing control. Through theoretical studies and selfanalysis already well prepared consultations with patients was entrusted to pupils, when suitable for beginners. The pupils were allowed to take the first steps of analysis alone, and required to keep an accurate record, and with this as a guide the teachers were readily able to make corrections. In this way the host of errors made by the beginner, due to defective comprehension of the aims and methods of analysis and too rigid adherence to single findings was avoided.

The Polyclinic feels satisfied with the results of its teaching activities, for the pupils have learned much and well and have shown the soundness of the idea. But this is only a beginning even if the outlook is of the best. The possibilities of the project are yet to shape themselves and they hope to make strides in the right direction in the not too remote future.

From the foregoing account of the establishment

and working of the Berlin Psychoanalytic Polyclinic we are made aware that though the organizing of such clinics or institutes differs from other medical clinics, such institutes in this country are not only feasible and practicable but are a matter of the utmost urgency. I do not believe they should be organized on the lines of the ordinary mental clinic or be an integral part of them at the outset; later when the didactic functions of such clinics come to the fore the need of their close affiliation with neuropsychiatry and psychiatry will be obvious. The great fault today is that the average trained psychiatrist knows too little of the discipline of psychoanalysis and *vice versa*. Psychoanalysis in theory and practice must be an integral part of any thoroughgoing system of mental science. This is the purport of the wise address of Dr. White in this year's presidential address before the American Psychoanalytic Association, and I believe this is the conclusion to which most well trained psychiatrists in this country today would subscribe. Will it be possible for us to overcome the curricular prejudices of our medical schools so that this important method in neuropsychiatry may be an integral part of the training in our schools, or shall this prejudice force an independent existence of such clinics or institutes outside the regular training of physicians in neuropsychiatry? Already active attempts to organize private and semipublic pay clinics are being made in this country. Can neuropsychiatry afford longer to ignore this public demand?

In conclusion I submit:

1. That psychoanalytical clinics and institutes are a necessary part of our armamentarium for the therapeutic alleviation of the large mass of neurotics who cannot afford to pay for psychoanalysis as now practised.

2. That such clinics are necessary for maintaining a consistent school in the training of psychiatrists and psychoanalysts, and thus obviate the present tendency to quackery in this specialty, the detailment of which is the active agitation of the daily press and which is largely due to our neuropsychiatric neglect.

3. That these clinics should be independent in organization but allied to our medical schools and hospitals.

4. That full time service of the resident staff should be expected with a controlling or advisory board of analysts to support and give direction to the therapeutic and didactic work of the clinic or institute.

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2 East Sixty-fifth Street.

The Fallibility of the Intradermal Tests with the Grasses in Chronic Perennial Bronchial Asthma: Hypodermic Tests*

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The pollen materials used in this report were the ordinary 1:50 commercial testing extracts of Bermuda and Johnson grasses (Capriola dactylon and Andropogon halepensis) of the Arlington Chemical Co., and special Berkefeld filtered 1:20 extracts of timothy, Sudan, Johnson, orchard and blue grasses, prepared by extracting for four days, five gm. in 100 c.c. of Coca's solution thirty-three and one third per cent. and glycerin sixty-six and two thirds, after acetone treatment. All tests were done intradermally with a dose of 0.01 c.c. The potency of each lot of the material used was satisfactorily determined on known sensitive controls; the tests were performed not once but repeatedly, often with each of the extracts mentioned in 1:50 dilution, and usually with more than one lot of the extracts, eliminating thus the questions of poor material and errors in technic. Positive tests when secured were graded as follows:

A wheal 0.5 cm. to 0.75 cm. .....+
0.75 cm. to 1 cm. .....++
1 cm. to 2 cm. .....+++, with pseudopodia ++++.

In this connection, it might be stated that an intradermal injection of 0.01 c.c. of a glycerinated extract of 1:50 strength of any pollen may produce a wheal one cm. in diameter with a slight surrounding erythema, but without pseudopodia, in any individual, allergic or otherwise. Local cutaneous reactions, indurations, erythemas, secured during treatment, or as a result of hypodermic tests, were graded according to the same scale. Cases tested were kept under observation at least an hour and seen again the next day.

Texas is composed in the main of farming and ranching, and not industrial or manufacturing communities, with few large cities and few forests. Most of the state, especially the southwestern section, possesses a mild climate with considerable areas of limited rainfall and high winds, conditions conducive to abundant air borne pollen production with wide dissemination. Hence, the vast majority of our hay fever and asthma cases are of pollen etiology, and in our section of the state, usually of the chronic perennial type. Owing to the lack of rain and comparatively high wind velocity in the fall and early winter months, our pollen air content reaches its maximum at that time, with consequent coincident maximum clinical suffering. We rarely see grass hay fever or asthma limited to the spring months as elsewhere. Such cases with us are practically invariably either fall or early winter cases as

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well, or perennial in type, with a period of heightened autumnal intensity.

Our first heavy frost usually comes about January 10th, but the ragweeds and carelessweeds die out in late November, an appreciable number of weeks previously, and coincidently, our untreated ragweed and carelessweed cases clear also in November, with the disappearance from the air of these two factors. Therefore, the history of the duration of symptoms of hay fever and asthma is as important with us as elsewhere. Also we do possess, in the grasses, a highly antigenic possible pollen etiological factor for our cases of perennial hay fever and asthma that might not exist elsewhere, in addition to a succession of other typical seasonal pollens (1). Actual air pollen analyses have shown that with us a heavy frost reduces, but does not remove completely, grass pollen from the atmosphere as might be expected.

On the Texas gulf coast, where many of our population spend their summers, from June to September the winds for approximately twenty-eight days out of thirty blow off the water, and pollen cases residing anywhere near a beach pass those months either totally or almost totally clear. As heavy frosts and freezes are practically unknown in that section, the grasses pollinate unceasingly the year round. The winds are decidedly frequently from the land, except in summer, and such grass pollen cases in fall, winter and early spring, do not secure anything approaching the satisfactory relief attained during the hot months. On the other hand, mountain cedar, our only other winter pollen, does not grow within one hundred miles of the Texas gulf coast.

This condition gives us a splendid opportunity to remove in a practical manner our pollen cases from pollen contact for a consecutive number of weeks during pollination season. Consequently, direct observation, or a history of the fact volunteered by the patient, of complete disappearance of allergic symptoms of the respiratory tract on the coast in summer, is of decided significance, especially if confirmed by a story of annoyance following inland trips, or a recurrence of trouble beginning in September, when the land breezes become more frequent. It might be added that the ragweeds also die out there in late November, as with us.

It goes without saying in this discussion that experimental contacts, as well as skin tests, have ruled out the influence of other antigenic factors, such as feathers, animal hair, foods, orris, etc. Cases are being considered only in whom symptoms continue notwithstanding the breaking of such other contacts.

It might also be added that with us the ragweeds as uncomplicated causes of hay fever and asthma are rather rare. Of 185 pollen or presumably pollen cases seen in the last fifteen months, out of a total number of 212 cases of hay fever and asthma, sixty-five per cent. of whom were asthmatics chiefly of the chronic perennial variety, we had only five cases of pure ragweed hay fever and one of asthma. In the same way, we see few cases of pure fall hay fever and asthma; in practically all of such cases the patients suffer also in winter and spring, especially in May when grass pollination is extremely high and when the air contains no Compositæ or Amaranth pollen granules. On the other hand, the grasses were proved factors in eighty-nine of our one hundred and nineteen known proven pollen cases as shown by history, skin tests and direct exposure to atmospheric pollen.

Consequently, from the statements and figures mentioned, the allergy worker in San Antonio and Southwest Texas must consider the possibility of pollen, and especially grass pollen, as a causal factor in every asthma case, seasonal or nonseasonal. So naturally our attention has been turned toward the etiological bearing of this particular antigen in all our perennial cases in which the ordinary grass pollen intradermal tests are persistently negative or only slightly positive, which study as a corollary, of course, determines the actual practical value of this usual method of testing for the detection of grass hypersensitiveness in chronic perennial asthma cases.

The skin response to pollen extracts in hay fever and asthma of such etiology is usually very prompt. Large typical wheals with pseudopodia are the rule, and are obtained not only with the ordinary 1:50 strength testing extracts, but with dilutions of 1:500 and frequently of 1:5,000. This description fits the ordinarily reported ++++ reaction. It is the custom of almost all workers in the field of allergy to accept as etiological positives only such reactions as are evinced by a wheal accompanied by definite pseudopod formation.

For several years, we accepted this usual criterion, but the failure to secure results in certain cases with either totally negative or mildly positive pollen tests, also negative or positive to other allergens, and assumed therefore of nonpollen etiology in spite of suggestive pollen histories, led to the assumption of the possible fallibility of the pollen skin tests in certain instances, and the endeavor to secure a method by which such error could be avoided. Naturally, our work has been limited altogether to our most predominant pollen—grass. In this connection, we have been unable to distinguish any reactive or curative differences between any of the grass extracts we have used—timothy, Sudan, Bermuda, Johnson, blue or orchard grass. Patients sensitive to one are apparently sensitive to all, as far as we can make out by tests and histories, and practically equally so. Desensitization by any of these six mentioned gives protection, at least locally.

The ophthalmic test, owing to its lesser sensitiveness, as reported by Vander Veer (2), we have not used. Also, in these severe chronic asthmas, our usual type, we have dreaded to spray dried pollen into the nose or trachea.

The assumption of the possibility of the existence of hay fever and asthma due to the grasses in the absence of any initial positive grass tests was reached from the following clinical observation.

It has been our custom to retest our cases constantly during the desensitization process, endeavoring in every instance to reach a desensitizing dose of sufficient strength to obliterate the initial positive diagnostic skin tests. Once this point was attained, it should apparently indicate the elimination of hypersensitiveness to that particular pollen, given, of course, the employment of undoubted potent testing material. In our experience with grass cases and extractions, reduction from a ++++ to a bare + is practically always possible with rare exceptions,

and decidedly frequently a complete obliteration of the initial commercial 1:50 testing extract positive is secured when treatment has been pushed to the use of 0.1 c.c. to 0.2 c.c. of a 1:20 extract. However, in many instances, obliteration of the positive skin tests with the inception of the use of the 1:20 dilution does not correct the allergic respiratory symptoms in coseasonally treated cases, and has not prevented the appearance of hay fever or asthma in preseasonally treated cases as we learned to our chagrin. This would make it appear that a diagnostic error had been made, were the commercial diagnostic tests, that is those in use by the average worker, infallible as a test of clinical hypersensitiveness to these grass pollens. Otherwise, clinical symptoms should cease with the demonstration of the obliteration of the positive skin tests, and symptoms should not later appear in preseasonally treated cases when this point has been attained as a result of treatment, or else some other factor is involved in the case. By clinical study, a protective grass dose in our vicinity varies up to 0.5 c.c. of a 1:20 dilution, and is seldom the 0.3 c.c. of a 1:100 dilution as commercially advertised as sufficient. When these larger doses mentioned have been attained by us, these same grass hay fever and asthma cases do clear up, and preseasonal cases with such doses are almost invariably protected, which fact practically eliminates the consideration of extraneous factors. Hence with us, the securing of a later negative skin test with the ordinary commercial extract definitely positive at the beginning of treatment, does not mean complete or even nearly complete clinical desensitization.

It is a well known fact that the degree of sensitiveness to allergic factors varies in various individuals. This is, of course, demonstrated easily by the response to various serial dilutions at the onset of desensitization treatment. In some cases the patients easily tolerate at once doses of a 1:1,000 dilution; with others, treatment must be started with as low as a 1:50,000 or even a 1:100,000 extract. Nor is severity of symptoms any indication of the degree of sensitiveness actually present. Heavy doses in a mildly sensitive person will produce as severe symptoms as light to moderate doses in a person of a lesser degree of sensitiveness. With us, the condition of heavy atmospheric pollen doses is continued over many months, not weeks, giving abundant opportunity for producing severe protracted symptoms in patients actually, comparatively speaking, possessing no great degree of hypersensitiveness.

The following question also must be taken into consideration: Does the intradermal test invariably indicate the degree of sensitiveness present? Is such sensitiveness limited to the nasal or bronchial mucosa with at times the skin not implicated?

In support of this idea of the absence of any such parallelism, is the fact that, while involvement of the skin, bronchial, nasal and ocular mucosa, and even at times the circulatory system, in the severe constitutional reactions of anaphylactic shock following overdoses from pollen extracts certainly at times occurs, such widespread general involvement is not invariable, vasomotor rhinitis and asthma occurring under such circumstances much more frequently without, than accompanied by, angioneurotic edema or urticaria. Also it is at times possible to have constitutional reactions suspiciously or even undoubtedly due to treatment, without the slightest evidence of erythema, induration or wheal formation at the site of the needle injection puncture. As additional confirmation of this point, it has long been recognized that positive skin tests are notoriously difficult to elicit in the aged, no matter how severe the asthma. If grass hay fever and asthma can continue unmodified even after the desensitization has been carried to the point of the elimination of the initial positive diagnostic skin tests, later to clear up even during pollination season by the employment of stronger extracts in higher doses, obviously then, the nonappearance of the expected intradermal grass test cannot be safely regarded as an indication of the absence of grass hypersensitiveness. This might suggest one possibility—that the hypersensitiveness in these cases could be detected by the employment of an extract of a strength greater than that of the ordinary commercial grass extract. Much to our surprise, we found this seldom to be the case. When 1:20 or 1:10 extracts are employed after the elimination of the commercial 1:50 extract positives, the positives secured are only decidedly questionable, frequently only a+ or ++, never the expected ++++ that would be of clinical unquestioned value. (This does not, of course, preclude the possibilities of securing positives with a testing extract of greater strength if we knew how to prepare one.) That this does not represent merely a local exhaustion of the reactive powers of the skin from treatment, is shown by the fact that these cases continue at such times to show unmodified, their original positive reactions to feathers, animal hair and other antigens.

Whether in these old grass asthmatics with lapse of time, the upper layers of the skin gradually lose an original reaction power, is purely a matter of surmise. Whether there exists some factor peculiar to grass pollen extracts which makes them, under some circumstances at present unknown, less antigenic to the skin, while still highly antigenic to the nasal or bronchial mucosa, is also purely a matter of speculation. If pollen asthma represents a further stage of pollen hay fever due to lessened resistance, and the skin reaction represents this degree of resistance somewhat as does the von Pirquet test in tuberculosis, then our figures are rather significant. While of our thirty-five known grass pollen hay fever cases, as shown by history and direct observation of pollen contact and withdrawal, only five or fourteen per cent. gave a ++ or less diagnostic test, and the other eighty-six per cent. the usual ++++ response, or response large enough to be undoubted, in a similar group of 112 grass asthma cases, the obvious ++++ positive reaction was seen in only fifty-nine or fifty-two per cent., about two thirds the percentage of what was found in the hay fever cases. In other words, just under one half of our chronic grass asthma cases gave a ++ or less skin reaction to the ordinary intradermal test, merely wheals 0.5 cm. to 1 cm. in diameter without pseudopodia, and without the irregularity of outline distinctive of the specific positive reaction, tests ordinarily considered negative. Cases entirely negative to all the skin tests are taken up later. A method of testing which misses

a proportion in the neighborhood of fifty per cent. can scarcely be considered infallible or even reliable. In contradistinction to these findings, are our almost invariable ++++ reactions to the other pollens of this community—ragweed, carelessweed and mountain cedar. Curiously enough, we see practically only hay fever, and almost never asthma due to these other pollens. Also where sensitiveness to grass exists coincidently with sensitiveness to other pollens, the skin response to the grasses even when positive, is almost never as large as the corresponding positives to such other pollen or pollens.

Another curious fact is, that while in our work intense urticaria and erythema multiforme have frequently accompanied the constitutional symptoms due to overdosing with ragweed and carelessweed pollen extracts, we seldom or never see any or but extremely slight skin involvement with the most intense asthma resulting from overdosage with grass extracts.

Obviously, then, in these grass cases, minor degrees of positive reactions, a + or ++, may be of decided clinical significance. Whether this would hold true elsewhere where grass pollen is less abundant and of short seasonal duration, is of course only problematical.

The following case illustrates this point:

Case I.—Mrs. C. H. F., aged twenty-eight, was seen September 9, 1924, with very severe perennial hay fever of four years' duration. Intradermal tests: ragweeds ++++; Bermuda and Johnson grasses +. On account of the case being first seen during ragweed season, it was decided to postpone ragweed treatment and try the experiment of desensitizing against the grasses. Treatment was started with a 1:5,000 extract on September 16th, and given at least once a day when absence of reactions permitted. Local reactions were rather numerous. Improvement started at once. Treatment was completed on January 5, 1925, the final dose being 0.15 c.c. of a 1:20 extract. In this case the patient lost her hay fever completely under grass treatment by the middle of October, the extreme height of the ragweed season. Obviously the + grass tests were actually more significant than the ++++ ragweed. (This case gave a ++++ reaction to a 1:500 dilution of ragweed.)

If now, a rather appreciable percentage of known proven grass asthma and hay fever cases give merely insignificant questionable positive diagnostic skin reactions, it is perfectly natural to go a step further and assume the possibility of the existence of similar grass pollen etiology in cases with absolutely negative intradermal tests to all antigens, or as an actual complicating antigen, in cases with negative grass tests and definite positive reactions to feathers, hairs or other allergens, presumably making these latter the sole etiological antigenic factors.

During the past fifteen months we have had nine cases of hay fever and asthma giving repeatedly negative skin tests to all allergens. We have also had the opportunity to keep under observation seventeen other cases of asthma whose pollen tests were negative and who hence were ascribed originally entirely to other allergens that were positive, in whom the persistence or recurrence of the asthma in spite of breaking of such contact, led to further study. All of these cases were reinvestigated from the point of view of grass pollen etiology. A revision of the history of a number of these cases showed stories such as being better indoors, out of a draft, freedom during summer on the sea coast or on an ocean trip, relapses during or following automobile rides or in high winds, increase of symptoms during the height of pollination season, and freedom from symptoms during residence in a downtown hotel in a large city (out of pollen contact).

At times highly probable proof is afforded in these cases as for instance:

Case II.—One of us (E. M. G.) had been a chronic perennial asthmatic of many years' duration, and practically an invalid for years on heavy doses of adrenalin several times a day, asthma originating in Ohio. A severe complicating sinusitis had required several intranasal operations, all unavailing as far as the asthma was concerned. There was no definite hay fever. All skin tests were repeatedly negative except to feathers and wool, easily eradicable factors in our community. Four years ago, after not being clear a day for two years, in desperation, as an experiment, work downtown was ordered with immediate cessation of the asthma as a result, which cessation has been practically permanent in spite of persisting severe, purulent sinusitis. A few months ago, while working in the office, a bottle of 1:20 grass extract broke in her hands. Hay fever and slight asthma immediately followed, and have repeatedly followed the handling of this extract. Desensitization to grass has been found exceedingly difficult on account of numerous local and constitutional reactions during the process. Even after the discovery of this pollen extract hypersensitiveness, with much experimenting, it has been impossible to secure the slightest positive intradermal tests with any of the grass extracts at our command.

If this contention is correct, that grass pollen is the actual etiological factor in at least some of these apparently nonallergic cases of hay fever and asthma, then a certain number of patients should secure relief from symptoms by grass pollen desensitization done in the usual manner. This was done in sixteen cases. As a result, for the first time in years, complete or very marked relief lasting many months so far, was secured in twelve or seventy-five per cent., all severe perennial cases. Of the other four, two are better, the other two showing no improvement. Two other cases could not be desensitized on account of repeated severe constitutional reactions to minimal doses of grass extract, but clear up completely for weeks on a stretch as long as an indoor existence is maintained.

It is going too far, of course, to assert that all nonskinreacting cases of hay fever or asthma are grass cases. There probably exist other allergens where the skin at times fails to respond. House dust can be eliminated in these cases as most of them maintained their indoor existence in their own homes under identical house environment.

The following cases are typical:

Case III.—M. E., aged seven, first seen September 16, 1924, had her initial attack of asthma in El Paso, Texas, at the age of one year, starting in the spring and lasting four months. She lived in Shreveport, La., for several years, and was entirely clear. After moving to San Antonio, she was clear for a year.

Her trouble returned in June, 1923, and had persisted rather steadily ever since, except when on the gulf coast in summer where she was invariably totally clear. Had always slept outdoors. Intradermal tests to pollen, animal hair, orris, glue, horse serum, tobacco and sixty foods were all negative. Owing to the history, pollen etiology was suspected, and the patient was kept indoors under pollen precautions with immediate relief. Attacks could be brought back at any time by playing in the grass. Hypodermic tests:

		Reaction
September	20, 0.05 c.c., 1:5,000 extract of Sudan grass	0
	22, 0.05 c.c., 1:500 " " " "	0
	24, 0.05 c.c., 1:50 " " " "	0
	26, 0.1 c.c., 1:50 " " " "	0
	28, 0.2 c.c., 1:50 " " " "	0
October	5, 0.05 c.c., 1:20 " " " "	0
	7, 0.1 c.c., 1:20 " " " "	0
	9, 0.15 c.c., 1:20 " " " "	+++

In addition to the local skin reaction, a rather sharp attack of asthma developed within an hour after the last dose. Desensitization was then started, beginning with 0.1 c.c. of a 1:20 extract. Reactions of + to ++ were repeatedly secured during desensitization, and more than once were accompanied by asthma. The final dose used was 0.25 c.c., repeated several times. The asthma cleared up completely within three weeks and has not returned.

COMMENT.

This case represents the type of a low degree of sensitization. The El Paso grass problem is almost identical with that of San Antonio—winds and dryness producing abundant high pollen atmospheric content, sufficient to give symptoms in a case possessing no great degree of hypersensitiveness, not enough to have symptoms in Louisiana where rainfall makes atmospheric pollen less abundant.

Case IV.—J. M. S., schoolboy, aged fourteen, was first seen on May 1, 1924, with steady asthma of two weeks' duration. He had a history of attacks two or three times a week for ten years past. Had always lived in San Antonio. Attacks were always worse in winter, clearing every summer (which was invariably spent on the South Texas gulf coast). Attacks were worse at night. Said he had had a "cold" for about nine months with much sneezing. Sleeps on cotton pillows on the coast, but on feathers at home. No animal pets or chickens. Skin tests: chicken feathers ++++, horse hair +, wool ++, human hair +++, cattle hair ++++, camel hair +++, goat hair ++, rabbit hair ++, cottonseed meal ++++, nuts ++++ and various other foods +++ and ++++. Pollens: ragweed +, grass +. The history and the tests were decidedly suggestive of a feather-hair-food case. An outdoor life was ordered, feather pillows removed and suspected foods, suggested by the tests, eliminated. No improvement occurred. During May and June, wool desensitization was started with no improvement. From June 19th to September 15th this patient was on the Texas gulf coast as usual, and entirely clear, taking no dietary precautions. On returning to San Antonio, asthma started again at once, being almost daily. All pollen tests were again negative. Routine pollen precautions were instituted with immediate improvement. Hypodermic tests gave a ++++ reaction with 0.2 c.c. and 0.25 c.c. of 1:20 grass extract. Grass desensitization treatment was started on September 29th, beginning with 0.05 c.c. of 1:50 extract. As this was a coseasonal immunization, started at the height of the pollen season, numerous reactions, local and general, occurred. The final dose of grass extract used was 0.4 c.c. of 1:20 dilution of timothy. The last asthma occurred about Christmas, 1924, and the boy has been entirely clear ever since, for the first winter in his parents' recollection, though he eats what he wants and has been back on feather pillows for months.

The strong feather and hair tests, confirmed by a history of winter asthma, with negative pollen tests, caused the natural error of overlooking the actual significant allergic factor in this case—the grasses.

As further corroboration, these cases are not particularly easy to desensitize, local and constitutional reactions occurring during treatment just as frequently as with the cases giving good initial positive skin tests. Obviously, the deeper cutaneous tissues do not share in the lack of sensitiveness evinced by the upper dermal layers involved in the intradermal tests. We have not had a single relieved case who has not shown local and constitutional reactions during grass desensitization treatment, and we have had several whom we have not succeeded in immunizing at all after months of effort due to repeated constitutional reactions with minimum doses. One of these, with repeated negative intradermal grass tests, under treatment for months, cannot pass 0.05 c.c. of 1:5,000 of any grass extract without a local reaction and asthma lasting days. This same case will remain clear at any time indoors.

The occurrence of such local reactions during desensitization treatment naturally suggested the idea that advantage might be taken of such reactions intentionally produced for diagnostic purposes, and for the past year such is our routine where the ordinary intradermal grass pollen tests are negative or unsatisfactory.

HYPODERMIC TESTS.

Technic.—The injections are given daily or every other day in the biceps region, the dose being raised until definite indurations 1.5 cm. to 2 cm. in diameter are secured, usually accompanied by erythema. Further dose increase will be accompanied by constitutional symptoms, the severity of which will vary according to the rate of dose increase, but which with proper care need be only slight. Such constitutional reactions, of course, increase the diagnostic value of this procedure. It goes without saying that the risks involved and the objects of the test should previously be explained to the patient. The following doses are recommended:

1:5,000 dilution:	0.05 c.c., 0.1 c.c., 0.25 c.c.
1:500 "	" " "
1:50 "	" " "
1:20 "	0.05 c.c., 0.1 c.c.

The desired positive reactions are almost invariably secured by the time the 1:50 dilution is reached, ordinarily in either the 1:5,000 or 1:500 dilutions. Following their subsidence, either with or without the use of epinephrine, desensitization can be proceeded with in the usual manner.

The following case illustrates the value of this procedure:

Case V.—M. C., schoolgirl, aged fourteen, seen December 29, 1924, she had had asthma off and on for ten years, nonseasonal in type. She had always lived in or near San Antonio. Knew she could not stand much face powder. The only time she had been free from asthma was for six months when the family kept no chickens. Her father could not use feather pillows. The present attack of three days' duration followed picking chickens. Intradermal tests: feathers (including those from her own chickens and pillows) 0 or +; foods, 0; orris root, +; pollens, 0; chicken feed, ++. This patient naturally suggested feather or chicken feed etiology. However, the case was cleared under epinephrine and an indoor, closedup existence. On December 31st, she was given a hypodermic grass test of 0.1 c.c. of 1:5,000 dilution of Johnson grass with a negative reaction. On January 3, 1925, she was given 0.1 c.c. of 1:500 dilution of the same grass with ++++ local reaction consisting of induration and erythema. In confirmation she was told to take a long auto trip into the country on a windy day and to walk in grass and weeds. This was done four days later, resulting immediately in hay fever and asthma. There was no possibility of feather or chicken feed contact.

Indoor existence keeps this case clear in spite of feather pillows, but she will have asthma if she spends very much time outdoors in windy weather. The grass hypodermic tests, confirmed by environmental grass pollen contact prevented us from falling into error on account of the negative intradermal grass tests in this instance, and calling this a feather or chicken feed case. Grass and mountain cedar pollen were the only pollens in the air at the time. The history eliminates mountain cedar; moreover, we have never seen a negative skin test mountain cedar case.

In past years we have had a number of instances of asthma and hay fever with definite feather, animal hair or food positive skin tests in whom the pollen tests done coincidently were absolutely negative. We have, as a result on such occasions, advised our patients that the elimination of such factors from their environment would bring about a cessation of their symptoms. At times this has, of course, been the case, but in various other instances we have been mortified and baffled by the unchanged persistence or return of the asthma following the proven removal of these antigens, having placed full dependence on the negative pollen tests, never dreaming of a possible pollen etiology. Undoubtedly, our experience in that particular has not been unique.

With the recognition of the noninfallibility of the pollen tests, at least as far as the grasses are concerned, and the routine performance of the hypodermic tests corroborated by clinical improvement following the institution of indoor existence and pollen precautions, we have found a means of avoiding such an embarrassing situation. It must be admitted that these grass hypodermic tests have never been done except on such patients whose history or environment suggested the possibility of grass etiology, or in whom an indoor existence, away from pollen, gave some measure of relief, and we have never had a single case that did not respond to one of the grass dilutions employed. Proof of the scientific value of this procedure would certainly be much more conclusive were we able to report negative reactions to high strength extracts in normal controls or in proven animal hair cases. This experiment we have been tempted to try on several occasions, but have never done so for fear of inducing thereby a sensitiveness hitherto nonexistent.

The value of this procedure is shown by the fact that it has enabled us to diagnose and relieve completely, either by desensitization or pollen precautions, a number of cases apparently nonallergic, and also a number with definite positive skin tests to other allergens, where the positive tests secured had apparently little or no bearing on the actual etiology of the asthma or hay fever, as shown by the continuance of the symptoms.

We are not prepared to state that this is a specific reaction or that the results are due to the specific desensitization secured, as in our hands a high immunization against the grasses frequently gives a high or even complete protection against ragweed and carelessweed, completely obliterating the +++ or ++++ positives secured with their extracts at the inception of grass pollen treatment, as reported previously (3). Still, on the other hand, we know of no work on air pollen analysis in the north that would tell definitely the disappearance or appearance of grass pollen in the air. We have actually found such grass pollen in the air of both Kansas City and Chicago in late August or early September, but have had no further experience.

There is also the possibility that the increase in symptoms in these cases in the winter months is due to the nonspecific action of winds and cold air on an originally specific grass basis. Many of our cases of this type are worse in winter, at a time when grass pollen exists in the air to a far lesser degree than in warm weather, and an indoor existence naturally also eliminates this factor and may account for some of the improvement secured.

We have also had recently three cases of grass-ragweed asthma (positive skin tests) starting in Chicago and St. Louis in winter, and one from Cincinnati starting in February with negative intradermal tests, positive by hypodermic tests, where elimination of feathers, wool and suspicious foods gave no relief, until pollen precautions were started, the inception of whose asthma was far out of the usually recognized grass or ragweed pollination season. Merely because grass hay fever occurs in the spring months and ragweed in the fall in the north, does not mean that high winds in winter cannot collect enough grass or ragweed pollen granules from building walls, parks, etc., to affect a hypersensitive pollen asthmatic. Only a knowledge of the pollen content of the air at the time and location of the inception of the allergic respiratory symptoms can answer that question, and may prove the real solution of the etiology of some of the northern socalled nonallergic or bacterial asthmas, as it apparently has with us.

The following case also is at least decidedly suggestive of a connection between the grasses and northern perennial asthma:

Case VI.—I. S., aged forty-eight, first seen December 21, 1921, occupation none for years on account of asthma starting in childhood in England. Had lived most of his life in Chicago and Los Angeles with almost daily severe chronic asthma; was

always a little worse in the fall, winter and spring. Had had no hay fever for years. His first skin tests were done at the clinic of Rush Medical College several years ago, with the diagnosis of food asthma. No improvement occurred from dietary restrictions. Our skin tests when first seen by us revealed strong positives to ragweed, feathers and various foods. On account of his having symptoms perennially, the pollen test was disregarded and he was considered a feather-animal hair-food case. Precautions along that line were instituted, together with an outdoor existence. He did very poorly requiring almost daily doses of adrenalin. He then returned to Chicago with several admissions to the Michael Reese and Augustana Hospitals, where he made no improvement in spite of a double cervical sympathectomy done at the latter hospital in the spring of 1924. He was then treated in Newark, N. J., and New York City by high class allergy workers and considered a house dust case. Treatment along this and other lines gave no results. During all this time he lived outdoors or with windows open as far as possible.

He returned to San Antonio in February, 1925, with his usual considerable asthma. The possibility of pollen influences were then considered as a last resort, and a strict closed window, indoor régime ordered. Much to our surprise immediate relief followed. Our only winter pollen consistent with his history was grass. Intradermal tests with various grasses were negative. He was then tested hypodermatically in the usual manner being negative to 0.05 c. c. of a 1:5,000 extract, but moderately positive (++) to 0.05 c. c. of a 1:500 extract.

He was then considered a grass case, and the indoor existence maintained. This patient has been practically entirely clear of asthma at this writing for five months, a far longer period of remission than he can remember ever previously occurring. He has been desensitized to the grasses using timothy extract, final dose being 0.3 c. c. of a 1:20 extract. He has taken no pollen precautions for a month, and remains without symptoms. Naturally a year's remission will be more conclusive.

In consideration of the fact that we failed in this same person four years ago at the same time of year and under apparently identical environmental conditions, except with regard to pollen precautions, with additional failures at the hands of some of our best allergy men who did not consider this possible grass etiology on account of the negative skin tests and perennial nonseasonal history, the result in this case is at least suggestive of the correctness of the present etiological diagnosis.

Be that as it may regarding other localities, of which, of course, we can say nothing, it is none the less the fact that since the recognition of this grass pollen agency as a common factor of hay fever and asthma, tests or no tests, and the immediate institution of a constant closed window, indoor régime, where possible to do so, we have not had but two cases of socalled nonallergic asthma in the past year fail to lose their asthma within a few days, whereas previously with fresh air régime, we had, like all other allergy workers, cases in hospitals for months at a stretch failing to clear in spite of the elimination of feathers, wool and other apparent antigens. We have not had sufficient experience to warrant drawing deductions as to the diagnostic value of the hypodermic tests with other antigens.

Of course, the permanent maintenance of such a closed, indoor existence in an impossibility and relapses occur when such régime is broken for one reason or other, hence the necessity for subsequent specific desensitization. In the desensitized grass cases quoted as successes, such precautions have been omitted for months, though carefully kept at first for many weeks until a high degree of protection had been secured.

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The Use of Sodium Iodide Intravenously in Infections and Allergies

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(*Concluded from page 237*)

Case V.—A. P. entered my office complaining of heart trouble, dizziness and exhaustion. His appendix had been removed in October, 1924, during an acute attack. His tonsils were removed in July, 1925. A number of abscessed teeth had recently been extracted. There was one more under suspicion. The sockets of the recently extracted teeth were infected and discharging pus. His pulse, sitting, was 120, standing, 132. He had palpitation of the heart upon the least exertion. He had done no work in two and one-half months. His heart sounds were normal. His blood count showed 6,300 white cells, 64 per cent polys, 34.5 per cent lymphocytes. Sodium iodide was given intravenously. Next day the blood count showed 6,600 white cells, 78.5 per cent polymorphonuclears and 20 per cent lymphocytes. The suspected tooth was quite tender. His upper and lower gums were sore. He felt grippy and achy all over. The third day he felt better generally. His pulse, sitting, was 108. Another injection of iodide was given. The day following this he felt still better. He then had the suspected tooth extracted. It was found to abscessed. One week from the time he received the first injection of sodium iodide his pulse, sitting, was 92. He has continued to improve and is now well enough to go back to work.

CASE VI.—M. S. was losing a pound a week, was nervous, exhausted, had frequent headaches, and was toxic. Thorough examination revealed no apparent cause. Tonics, iron and arsenic intravenously and endocrine treatment were all valueless. After six injections of sodium iodide at two and three day intervals acute appendicitis developed. The appendix was removed and found to be full of pus. She is now well and vigorous and has gained nine pounds in weight.

CASE VII.—H. T. B., a business man, was completely run down in health. For four months he had been unable to do scarcely any work. At the time I saw him he was spending most of his time in bed. He complained of a constant pain over his heart, was nervous, exhausted, dizzy, apathetic and showed a steady loss in weight. He had been through the whole gamut of physical examinations by several physicians. No cause could be found to account for his condition. He did not respond to any therapeutic measure that had been tried. After an injection of sodium iodide he complained of a very sore throat lasting several hours. Following a second injection given two days later he again had a sore throat. This occurred again after a third and a fourth injection, but was progressively less marked each time. His tonsils were under suspicion and were removed. They were found to be deeply buried and badly infected. His general health improved at once.

A pain developed over McBurney's point, which he had never noticed before. We watched it. After four weeks of continued improvement, he again began to decline. Sodium iodide was again resorted to. He improved at once. After the fourth injection he did not feel as well. He felt still worse after the next two. Four days after the sixth injection an intravenous injection of iron and arsenic was given. Within one hour a severe pain developed over the appendix. The appendix was removed and found to be acutely inflamed. He is now steadily improving again in health and spending more time every day in his office.

ACTION OF IODIDE

I believe the iodide acted in dissolving exudate about the chronically infected appendix so that when the arsenic was given a dilatation of capillaries and lymphatics carried the infection into new territory.

In these last two cases the immunity developed was not sufficient to destroy the infection in the lymphatics of the appendix, and with the destruction of Nature's defensive barrier all that was necessary was some minor disturbance to cause an acute attack. In this cast case it was the arsenic. I have since had two additional cases of appendicitis, one developing in two weeks and one in two days after the use of sodium iodide, both acute in character, with vomiting, dizziness, pain, tenderness and all the classical local and general symptoms. All four of these cases were diagnosed clinically, no blood counts having been taken, but all were unmistakable, as verified by operation in each case and by subsequent complete restoration to health. I doubt if anyone would dispute me if I expressed my belief that blood counts in these cases would have shown a marked increase in leucocytosis.

In addition to these cases I have brought to light at least half a dozen cases of chronically infected tonsils, local reactions occurring in all but one, general reactions of a toxic, grippy nature in all of them, and an increase in leucocytosis whenever the blood counts were taken. Several cases of myositis have shown both local and general reactions with increased leucocytosis and have cleared up entirely under iodide therapy.

DIAGNOSTIC VALUE

As a result of the foregoing observations, I have adopted the use of sodium iodide intravenously as a diagnostic measure whenever chronic focal infections are suspected. I take a white and differential count before using iodide intravenously and again twenty-four hours later. I look for an increase in leucocytosis and for a local and general reaction. As a rule one or all of this trio are present. Sometimes one injection is all that is necessary for a diagnosis. Sometimes as many as six are required at intervals of two or three days. I rarely give more than six. Occasionally, after three or four injections, I give an intravenous injection of iron and arsenic, especially when an abdominal condition is suspected, as arsenic is known to have a dilating effect upon the mesenteric arterioles and capillaries. I rarely give injections of iodide on two consecutive days.

SYPHILIS AND TUBERCULOSIS

It is easy to see now why syphilis is benefited and tuberculosis made worse by the use of iodide. The exudates are absorbed in both cases. The lesions of tuberculosis are focal, and Nature's effort is to encapsulate and fibrose them. In her experience this is the best way to protect the organism against the ravages of the disease. In syphilis, however, the spirochete is everywhere, and Nature has developed a tolerance and has made no attempt to wall it off. The solution of exudates and pathological tissue is therefore of benefit in syphilis and a real detriment in tuberculosis. This holds also for the immunity reaction, as it is more difficult to produce an immunity against tuberculosis than it is against syphilis, and any immunity reaction if at all explosive is harmful in tuberculosis, causing an extension of lesions, but not so in syphilis. The supposed specificity of iodides in syphilis is merely apparent, as the pathology in syphilis is admirably adapted to give us a grandstand play of the therapeutic activity of iodides.

The appearance of a positive blood Wassermann reaction in spinal syphilis after the use of sodium iodide, where a negative Wassermann existed before, is a very pretty demonstration of the operation of sodium iodide in stimulating amboceptor elaboration by the release of antigens.

It must appear evident that the administration of sodium iodide would be contraindicated in any condition suggestive of tuberculosis, or for that matter in any condition in which a localization of infection is to be desired. In general it should not be used in acute conditions unless they are accompanied by a leucopenia.

ESTABLISHMENT OF IMMUNITY

In the foregoing cases we have been discussing the establishment of a true immunity in cases of in-

fections. In allergies we already have an immunity established to a high degree. Leucocytosis is already present as an expected accompaniment. We would naturally fail to see what beneficial effect an antigen liberator would have here. But the fact remains that allergies are benefited by sodium iodide intravenously, and that this benefit is accompanied by a drop in leucocytosis. Why should sodium iodide aid in establishing an immunity in the case of infections, and yet apparently destroy a high degree of immunity in allergies?

CASES OF ALLERGY

I have only a few cases of allergy in which I have taken white and differential blood counts before and after the administration of sodium iodide. Several of these cases are complicated with other conditions. However such cases as I have are rather suggestive if not conclusive. I have used sodium iodide in six cases of autumnal hay fever with marked relief in every case. I have had equally good results in at least as many cases of bronchial asthma. One case of eczema, apparently due to a metabolic insufficiency, showed an amelioration of all symptoms, the disappearance of edema and a drop of leucocytosis from 14,200 to 8,600 in three days, following two injections of sodium iodide. One case of urticaria and one showing gastric disturbances of unrecognized origin both yielded to sodium iodide with an accompanying drop in leucocytosis and polymorphonuclears.

Case VIII.—E. W. had suffered for years with hay fever and asthma. She entered my office suffering from an unusually acute attack of autumnal hay fever. Her blood count showed 13,200 white cells, 72 per cent polymorphonuclears, and 24 per cent lymphocytes. I gave her an injection of sodium iodide intravenously. She slept that night for the first time in some days. Next morning she had practically no indications of her hay fever left. Eighteen hours after the sodium iodide had been given, I took another blood count. It showed 8,400 white cells, 69 per cent polymorphonuclears, and 28.5 per cent lymphocytes.

Case IX.—Mr. T., suffering acutely with hay fever, but also showing a four plus Wassermann reaction and complaining of a splitting headache, was relieved of his headache instantaneously and his hay fever by the next morning by one injection of sodium iodide. His white cell count was 10,600 before and after the injection. His polymorphonuclear count dropped from 55 per cent to 53 per cent in twenty-four hours.

Case X.—Mrs. C., suffering from hay fever, complicated with myositis and a possibly chronically infected gallbladder, which I have judicially disregarded and have not attempted to follow up as I do not believe her in any condition to undergo an operation at this time, showed immediate relief from her hay fever after one injection of sodium iodide. Her white count before the administration of iodide was: white cells, 5,300, polymorphonuclears 64.5 per cent, lymphocytes 33 per cent; twenty-four hours later it showed 5,200 white cells, 69 per cent polymorphonuclears and 29.5 per cent lymphocytes. Six days after the iodide it showed 3,400 white cells, 62 per cent polymorphonuclears, 35.5 lymphocytes. I then gave one more injection of iodide and took a blood count next day. It showed 5,000 white cells, 50 per cent polymorphonuclears, and 47 per cent lymphocytes. After the first injection of iodide she showed a rather marked general reaction with nausea and vomiting lasting nearly all night. There was considerable tenderness on right side below the ribs. She complained of being dizzy for three or four days following. After the second injection, these symptoms were all lacking. Three weeks after the first injection she was feeling in better general health than she had for months past.

In dealing with allergies we are dealing with highly sensitive overstimulated amboceptor elaborators. To attempt to stimulate immunity here would be to whip an already overworked cell.

CELLULAR THEORY

According to the cellular theory of allergies, desensitization is brought about by changing the colloid arrangement within the sensitized cell so that it ceases to perform its immunity function. This condition has been brought about accidentally in true immunity in a few cases where the immunity had been built up to a very high degree artificially by still further injection of the specific antigen. It is commonly done in specific desensitization of hay fever by pollen inoculations, and in other allergies by inoculation of the specific antigen whenever it can be determined. Recently desensitization has been brought about by the use of nonspecific substances such as proteoses, peptone and sodium chloride injected either intramuscularly or intravenously. I believe the results obtained by the use of sodium iodide in allergies are due both to its action as a nonspecific desensitizer by overstimulating directly an already overworked cell function (i.e., by virtue of a primary action of the iodine ion), and also by specific stimulation of the function of amboceptor elaboration, i.e., by virtue of its action in suddenly releasing a flood of specific antigens from edematous areas and pathological exudates into the blood stream, thereby permitting them also to act upon the sensitized cell. The result is a sudden collapse or exhaustion of the immunity function as a result of cumulative stimulation, having possibly as its physical basis a rearrangement of the intracellular colloids. Thereafter the elaboration of specific amboceptors ceases—a necessary factor in the fixation of complement is missing, and consequently we have no toxic end product to produce the symptoms of anaphylaxis or allergy. This would explain way a person recovering from a severe anaphylactic shock is able to tolerate large doses of the very antigen that originally produced the shock. With the absence of complement fixation the demand for a leucocytosis ceases, and our leucocytosis falls. This, then, is the solution of our paradox.

USE DURING ACUTE ATTACK

It can be better understood now why sodium iodide is beneficial only when used during an acute attack of an allergic condition, and why the benefit is greater in the severest cases. We must have the effect of overstimulation added to an already overworked cell function, the more nearly exhausted the function, and the stronger and more nearly specific the added stimulation, the more complete and permanent is the relief.

The Inheritance and the Medicolegal Application of the Blood Group

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The medicolegal application of the blood group is surrounded with difficulties because of the transmission between generations by the germ plasm of the unit factor upon which a blood group depends. There is a total inability at present to tell whether a person is homozygous or heterozygous for the blood groups by a study of the blood group as it appears in the blood stream. All of the evidence available at the present time points to the four blood groups being hereditary.

The groups referred to in this paper are classified according to Jansky (1), although I used the Moss (2) classification in my work.

BLOOD GROUP FOR DETERMINING PARENTAGE

The use of the blood group as a means of determining parentage was first recommended in absolute terms by Ottenberg (3), although its possible use had been suggested or suspected prior to his recommendations. His conception of the hereditary nature of the blood group rests on a study of a portion of the elements upon which blood group is supposed to depend, namely the isoagglutinogens (A and B) of the red blood cells. The isoagglutinins (a and b) of the serum were ignored except to state that they were recessive to the agglutinogens. From a genetic viewpoint he, as well as others, believes that Group II and Group III each consists of a dominant and a recessive character, and that Group I and Group IV consist of recessive and dominant characters respectively. The rules of Ottenberg concerning parentage centre about his believing that unless the dominant substances are present in the parents they cannot appear in the children; and that Group I is a pure recessive, so that from crosses of Group I only Group I children could result. Ottenberg reports three crosses of Group I and Group I that are of conclusive value.

The conceptions of Ottenberg of the biological nature of the blood groups are perhaps best shown in the analysis of families in which crosses of parents in Group IV and I bear children in Groups II and III. It appears that Ottenberg believes that the specific substances for blood group rearrange themselves in the germ plasm of the parents, so that the agglutinins of Group I separate and recombine with the supposed dominant substances of Group IV, and after a recombination give blood Group II and III in the blood stream of the zygotes. There is no evidence to substantiate such a conception, although crossing over of chromosomes may be imagined in such instances. As crossing over does not explain some of the other data in connection with the blood group, it probably does not occur at all in connection with the germ plasm changes that take place in such crosses in order to produce the blood group of the zygote. There are rules governing the theory of crossing over. If crossing over occurred in the family reported by Ottenberg, it should occur in all similar crosses, and as there are families on record in which crosses of Group IV and Group I resulted in children in only Group IV and Group I, the crossing over of chromosomes can not explain the findings in families in which the children are in groups different from the groups of the parents.

Ottenberg believes that it is possible to foretell a parent in certain families by grouping one parent and the children. This belief arises from the dictum concerning the dominant substances. It is frequently possible to predict what the other parent might be without believing in the socalled dominant substances. The prediction will often be verified, but not because of the truthfulness of the theory that dominant substances must be in the blood stream of either parent. The danger of going wrong in such predictions rests in the possibility that a parent might be a heterozygote crossed with a homozygote, and only children with the blood group of the homozygote and the dormant character of the heterozygote appear. A subsequent crossing of these children would show unexpected blood groups. The necessity of actually knowing the ancestry in a pedigree study has been worked out in cattle by Cole and Jones (4).

The germ plasm constitution of homozygotes and heterozygotes for the four blood groups. The agglutinogens (A.B.) and agglutinins (a.b.) do not behave as unit characters.*

Egg or Sperm Gametes

Sperm or Egg Gametes	AB (IV)	Ab (II)	Ba (III)	ab (I)
AB (IV)	(IV) AB AB (IV) X	(II) Ab AB (IV)	(III) Ba AB (IV)	(I) ab AB (IV)
Ab (II)	(IV) AB Ab (II)	(II) Ab Ab (II) X	(III) Ba Ab (II)	(I) ab Ab (II)
Ba (III)	(IV) AB Ba (III)	(II) Ab Ba (III)	(III) Ba Ba (III) X	(I) ab Ba (III)
ab (I)	(IV) AB ab (I)	(II) Ab ab (I)	(III) Ba ab (I)	(I) ab ab (I) X

*The blood group in the blood stream of the zygote is theoretically represented on the right, although the one on the left might appear in any of the crosses. There is no way of predicting in crosses, whether the group of the male or female is most likely to appear first in the offspring. The reversibility of the blood groups in the heterozygotes is shown.

The rules of Ottenberg are formulated from the study of families which are too small in most instances to determine even partially the breeding possibilities of either parent, and without investigation of more than two generations. It is quite unlikely that an animal breeder would conclude from a two generation study that an animal was pure bred, and that only pure types would appear among its offspring.

DATA OF OTTENBERG

Of the families reported by Ottenberg I consider the third, fifth, seventh, twenty-second, twenty-ninth, fortieth, forty-sixth, and fiftieth as satisfactory for measuring, at least partially, the breeding possibilities of the parents. I consider the twenty-eighth, thirty-third, thirty-fourth, sixty-fourth, and sixty-sixth families of some value so far as numbers are con-

cerned. Small families of father, mother, and one or two offspring are largely valueless in this study. It is impossible to tell what the next child might be if only one child in a family is studied. I could have included in my studies a large number of such instances if I had been willing to accept such meagre criteria to prove a difficult problem of genetics. Small families are of value, however, in showing the possible groups from certain crosses. In fact, observations on parents with one child first called my attention to the fact that Group I parents could have legitimate children in a group other than Group I.

METHOD USED IN MY WORK

I used the technic of Vincent (5) in my work (6). The microscope, however, was used in all instances to confirm the macroscopic findings. The ten sources of error mentioned by Ottenberg did not enter into my work. Another rare source of error not mentioned by Ottenberg is the hemolysis of red blood cells in 2.5 per cent. sodium citrate solution. In the instances in my work in which this occurred the cells were discarded and fresh cells obtained. The work was repeated in the instances in which data at variance with the statements made by Ottenberg as to the breeding possibilities of parents were obtained. The cells in practically all of the families were checked with homologous sera. Fresh sera were used at all times.

In all of the families studied by myself not only was the mother informed as to the nature of the investigation, but the father also. In no family was there a question of illegitimacy. There was no reluctance on the part of the parents to have the work carried out. In the instance in the Tink family in which the criteria of Ottenberg were overturned, the cells were regrouped. The specimen was delivered to me with new markings, and in the midst of new specimens, so that I did not know that I was repeating the work until after the grouping was completed. The family had been thoroughly studied previously, as to family characteristics, by an institution well qualified to make such an investigation. Many of the known physical characteristics that are hereditary have been worked out in the family. A question of illegitimacy has never arisen.

SIGNIFICANCE OF MENDEL'S DISCOVERY

The essential discovery of Mendel was that in the germ plasm of hybrids, a segregation of the unit factors occurs. The unit characters of zygotes depend upon unit factors. The elements of dominance and recessiveness formed a mere subsidiary discovery. They were often important but never essential in the establishment of the transmission of a character by the germ plasm. The combination of a dominant and recessive character in the same zygote constituted a hybrid. Mendel worked with characters which he arbitrarily designated by some symbol for purposes of distinction. He used the capital letters of the alphabet to denote dominant characters and the small letters of the alphabet to denote recessive characters. Mendel primarily described all hereditary characters as constants, and gave them working formulas, which in their integrity were unvariable.

In attempting to prove the inheritance of any character in man the assumption of fixity as to the nature of the character to be studied is essential. The fundamental difference between studies in heredity in man and the lower animals and plants is the absence of a hybrid stage, or the stage of the first filial generation. In crosses in man there is an immediate progression to the separation of the characters of the parents, so that they appear in the first generation of the offspring, provided a sufficiently large number of children result to permit of this. Dominance and recessiveness derive their significance from the first filial generation and since this generation is absent in man, they can have no definite significance in the terminology for studies of heredity in man.

The characteristics of hybrids were studied by Kölreuter (7) years before Mendel. Mendel simply mated hybrids, and noted the appearance of the characters of the parental stem together with the same type of hybrid. I use the term hybrid to designate the offspring resulting from the first cross of pure types, and heterozygote for mixed individuals occurring in all subsequent generations, although biologically a hybrid and a heterozygote are the same.

CORRELATION OF LABORATORY AND GENETIC DATA

The blood groups are considered to be due to the presence in the red cells of agglutinogens (A. B.), and to the presence of agglutinins (*a. b.*) in the serum. The material entities, upon which blood group depends, are entirely unknown. The existence of these specific substances has been supposed because of laboratory experiments. The genetic study of the blood group, however, has been confined to the agglutinogens.

Any attempt to explain the inheritance of the blood group without studying the blood group as a whole ignores one half of the problem. If one half of the blood group is hereditary, the other must be. If the blood group is hereditary there is no possibility of additional agglutinins appearing in the blood stream unless the ancestry is such as to permit of this. According to this conception it is impossible to get a Group I offspring from Group II parentage. There is no possibility of introducing from any source into the blood stream the factor upon which the second agglutinin depends for its existence. It is quite easy, however, to understand this occurrence when it is known that there is a Group I grandparent in the family, and that one of the parents has a mixed germ plasm constitution for blood group. The fourth, fifty-second, and sixty-second families of Ottenberg would be clarified by a review of the grandparents in each instance.

The theoretical agglutinins and agglutinogens are so arranged in the blood stream of man as to give the four blood groups, I, II, III, and IV. By using symbols for the agglutinins and agglutinogens the groups have been expressed as *ab* (I), A*b* (II), B*a* (III), and AB (IV). While *a* and *b* have been used to designate the absence of agglutinogens, they are used to designate agglutinins, an actual character present, so that although they represent the absence of one character, they represent the presence of another. The occurrence of a white chicken from black ones never results unless there has been a white chicken mixed up in the ancestry.

(*To be continued*)

Diagnosis and Treatment of Seasonal Hay Fever*

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HISTORICAL

The first true description of hay fever as a clinical entity was given by John Bostock (1) in 1819. He ascribed the seasonal condition to external irritants, dust, bright lights, heat, and special odors.

In 1831, Elliotson (2), another Englishman, suggested that hay fever was due to the blossoms of graminaceous plants; but it was Blackley (3) in 1873, who properly described hay fever and established pollens as the cause.

In 1903 Dunbar (4) elaborated on Blackley's work and proved that the element in the pollen responsible for the symptoms was associated with the protein. However, recent researches at the New York Hospital, by Grove and Coca (5), have shown that the active principle in the pollen is not a true protein. They removed all protein and other detectable nitrogenous substances from pollen extracts, by means of tryptic digestion and dialysis and found no appreciable lessening in the atopic activity of the extracts. The active principle of the pollen is, therefore, not a protein in the usual sense.

Prausnitz and Kuster (6) have demonstrated specifically reacting substances in the blood of hay fever subjects, which have now proved to be responsible for the hypersensitive condition. It has been suggested that the term reagin be applied to designate this specific reacting body in the blood.

Researches at the New York Hospital by Levine and Coca (7) have shown that the degree of sensitiveness is dependent upon the concentration of these blood borne substances (reagins), and this concentration of the reagins in any atopic serum, can be measured with the use of the passively sensitized site.

SEASONAL HAY FEVER

Seasonal hay fever affects about one per cent. of the white population of the United States. The sexes are about equally affected, with a slight preponderance among females. It may occur at any age, but is most frequent between the ages of twenty and forty. It lasts years, often being so mild as to escape attention for a long time.

Seasonal hay fever requires, first, a predisposition, an inherited tendency, and secondly, an exciting cause, the pollens.

The inherited tendency of hay fever was demonstrated by Cooke and Vander Veer (8). This tendency is inherited most probably, as a Mendelian dominant, and may appear in a number of clinical forms, asthma, hay fever, urticaria, etc. These authors have also brought out the fact, that the stronger the hereditary factor, the earlier is the age of onset of symptoms. Atopic symptoms appear before the tenth year in seventy-three per cent. of children with a bilateral family history, as against nineteen per cent. where the antecedent history is negative.

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The pollen is the fertilizing agent of plants and is analogous to the spermatazoon in animals. Perfect flowers produce their own pollen, but most flowers are imperfect, and pollen must be carried for considerable distances to reach the pistils of plants. Pollen grains vary in size, color and shape. The smallest grain is six micra, the largest 280 micra in diameter. Pollen is usually yellowish but may be any color. It is most often spherical in shape. Chemically, pollen contains about twenty-five per cent. of protein. Pollen is disseminated either through the air, or by insects. When wind pollinated, flowers are inconspicuous and pollen is profuse. Insect pollinated flowers are bright colored or white, sweet smelling, and the pollen is scanty in amount.

Practically speaking, only pollens that are air borne are factors in the causation of seasonal hay fever. Insect pollinated plants only affect by direct contact, and therefore are of very little importance. Goldenrod (solidago canadensis), daisy (chrysanthemum), dandelion (leontodon), roses (rosaceae), sunflower (helianthus), clover (trifolium), and the fruit trees are insect pollinated.

SYMPTOMS OF SEASONAL HAY FEVER

The annual attack of seasonal hay fever occurs in accordance with susceptibility and exposure to pollens. There is tickling in the eyes and nose with tearing and sneezing. The nasal mucous membrane becomes edematous resulting in a copious discharge of serous fluid. A symptom often present and bitterly complained of, is the tickling sensation in the soft palate and posterior nares. Often there is an attack of asthma.

These symptoms may be mild, and confined to a particular mucous membrane, eyes, nose, throat or bronchi. If the symptoms are severe, malaise, general irritability and digestive disturbances may be present. These symptoms continue with various degrees of severity, depending upon weather conditions during the season, with aggravation of symptoms on hot, dry and windy days, and marked relief on rainy days. All symptoms stops when pollen ceases to form. Hay fever is, of course, neither contagious nor infectious.

TREATMENT

The present day treatment of seasonal hay fever is based on the principle of desensitization of animals, introduced by Besredka. He found that sensitive animal could always be rendered specifically and completely insensitive, by a suitable and gradual neutralization of antibodies which are responsible for the hypersensitiveness (desensitization). In 1911 Freeman (9) and Noon (10), in England, and Robert A. Cooke (11), in this country, made successful use of this concept in the treatment of hay fever.

It is immaterial to the patient, whether the process involved is that of actual desensitization or not, he is concerned only with the results obtained. As a matter of fact, the process is not that of desensitization, for we must distinguish between anaphylaxis

or animal hypersensitiveness, and atopy or inherited hypersensitiveness in human beings. In brief, some of the differences between the two are:

VARIATIONS

1. In anaphylaxis the exciting agent is antigenic (capable of producing specific antibodies); in atopy, the existing agent is often not antigenic; it may be a drug. No specific antibodies are produced.

2. Anaphylaxis requires two injections, one to sensitize and the second to shock; in atopy, first contact often is sufficient.

3. Anaphylaxis is artificially produced; atopy is inherited.

4. In anaphylaxis complete desensitization is always successful; not so in atopy. Positive skin reactions persist, though they may be modified. A small dose of a specific protein, has been known to stop all symptoms of hay fever for years. This is unknown in anaphylaxis. In fact, after a time, the animal becomes more sensitive.

What we produce by treatment is a lessened clinical sensitiveness, a hyposensitization.

VARIETIES OF SEASONAL HAY FEVER

There are two principal varieties of seasonal hay fever in this section of the country: the early, or spring type, and the late, or fall type.

The early variety (March to July) is usually due to the pollens of the grasses (gramineae), timothy grass (Phleum pratense), June grass (Poa pratensis), orchard grass (Dactylis glomerata), red top (Agrostis vulgaris), corn (Zea mays), and plaintain (Plantaginaceae), etc.

The tree pollens are sometimes factors at this time of the year. The fruit trees are insect pollinated and therefore can be disregarded, but tests must be made for the ash (Fraxinus americana), hickory (Hicoria ovata), oak (Quercus varieties), maple (Acer varieties), elm (Ulmus americana), poplar (Populus), birch (Betule varieties), and pine (Pinus varieties), which are wind pollinated, especially if the hay fever starts in March or April. Trees, however, pollinate for a short period, two to three weeks, and fortunately affect only a small number of persons.

Grasses are biologically identical and show a group reaction. Desensitization with timothy grass, the most important members of the group, protects completely against the other grasses. Clinically, we have treated a series of patients (early hay fever subjects), with timothy grass extract; another series with timothy and orchard grass extracts, and still another series with the combined extracts of four grasses, and we obtained just as good results with timothy alone as with any other combination. This clinical experience has been substantiated in the laboratory by the recent work of Coca and Grove (12), who, by means of passive transfer, have proved that all of the atopins of June grass, orchard grass, and red top, are contained in timothy pollen. Plantain must be considered as a separate factor, and is responsible for a small percentage of early cases.

FALL TYPE OF HAY FEVER

The late or fall type of seasonal hay fever is due principally to the common ragweeds (Ambrosia elatior and trifida), the season extending from August 12th, or thereabout to the first frost. The majority of patients are symptom free by September 15th.

DIAGNOSIS

The diagnosis of seasonal hay fever is made by 1, the history, abrupt onset, annual recurrence, abrupt cessation; 2, tests with extracts of the suspected pollens. The tests are the skin and eye tests.

TESTS

Skin Tests.—It is common knowledge that the skin almost always carries cells that are hypersensitive to the same substance that affects the nasal, bronchial or conjunctival mucous membrane. We, therefore, happily, have a most excellent means for specific diagnosis.

There are two methods of testing the skin; the dermal or scratch test, and the intradermal or intracutaneous test. In the scratch test, a small amount of the extract is applied to a linear scratch in the skin; in the intradermal, one hundredth or one fiftieth of the solution is introduced into the layers of the skin, by means of a tuberculosis syringe, using a 26 or 27 gauge needle.

In either test, a positive reaction is determined by the formation of a wheal, with pseudopod projections. Reactions (wheals) one, two or three centimeters in diameter, are designated one, two or three plus, respectively.

There can be no question that the intradermal test is much better (13). Its advantages are: 1. It is easier to perform. 2. Less time is required. 3. It is more convenient, the same solution being used for testing as for treatment. 4. It has a greater diagnostic accuracy. Intradermal reactions are read in from five to ten minutes.

Ophthalmic or Eye Test.—A drop of the pollen solution in instilled into the conjunctival sac, with the same syringe used in performing the intradermal test, and a positive reaction is determined by the resulting circumcorneal and conjunctival injection, with itching and tearing. Reactions are noted one, two or three plus, depending upon the degree of conjunctival irritation. Reactions are read within five minutes. In the eye test, the reaction depends upon the concentration and not upon the amount of the solution instilled.

The eye test is of extreme importance. We are interested in mucous membrane sensitivity, and the conjunctiva is a most convenient mucous membrane, and enables us to reproduce in minature, the seasonal condition.

CLASSIFICATION OF CASES

Having determined that the mucous membrane is sensitive, we now go back to the skin and classify our cases, in accordance with reactions to the various strength solutions used.

Our pollens are extracted with Coca's (14) fluid, and standardized by their nitrogen content. Levine and Coca (15) have shown that, prepared as described above, the nitrogen content runs parallel with the atopin content of the pollen extract.

The test solutions used contain .0001 mg. nitrogen to the c.c., .001 mg. nitrogen to the c.c., .01 mg. nitrogen to the c.c., and .1 mg. nitrogen to the c.c.

Cases are classified A, B, C or D according as

they react to the first, second, third or fourth of these dilutions. Patients may fall in between these classes and be AB, BC or CD.

Class A patients, which are the most sensitive, require a comparatively small amount of pollen extract to protect them, the maximum dose reached being equivalent to .01 mg. nitrogen to the c.c. Class B patients are less sensitive and require more extract, reaching a maximum dose equivalent to .025 mg. nitrogen to the c.c. Class C patients reach a maximum dose of .06 mg. nitrogen to the c.c., and Class D patients, the least sensitive, require a comparatively large amount of extract, reaching the maximum dose of .1 mg. nitrogen to the c.c. Most patients fall in class B or C.

It is best to begin treatment preseasonally, starting our injections eight to ten weeks prior to the date of expected onset, giving treatment at weekly intervals. The strength of the pollen injections are gradually increased, according to a fairly definite schedule, to reach the maximum dose in the class (A, B, C, D), at about the time of the onset of the season. Injections are continued *throughout the season,* at seven to ten day intervals, the number of injections given to a patient numbering about twenty.

CONSTITUTIONAL REACTIONS

These occur about once in every two hundred injections and are manifested by the appearance of hay fever, urticaria or asthma. If the reaction is severe all three types are present. Constitutional reactions usually occur within an hour after the injection and are readily controlled by giving six to eight minims of adrenalin hypodermically.

Constitutional reactions are due to the following causes:

1. Injection of extract into a vein. Reaction here is almost immediate, but may be prevented by detaching syringe from needle, to see if blood flows.

2. Changing the extract. Fresh extracts are more potent. In changing from an old to a fresh extract, the patient is likely to get an overdose. We prevent this by making up all the extract for the season's use at one time. Secondly, we keep the extract on ice. Under these conditions the extract maintains its full potency for at least a year.

3. Overdoses. Carefully classifying our cases, and controlling the dose by keeping to schedule, will prevent constitutional reactions from this source.

MULTIPLE REACTIONS

Where the patient is sensitive to more than one pollen, not biologically related, each pollen is to be used as a distinct entity.

Patients should be tested, not only with the suspected pollens, but also with some of the inhalants, especially house dust, and where marked reactions to house dust occur, it is advisable to add dust extract to the pollen injections.

All early cases should be tested with ragweed and all late cases with timothy extract, because patients sometime show skin sensitivity, before mucous membrane sensitivity develops, and while we treat only clinical manifestations, still it is important to keep a record and warn patients in advance.

Early hay fever is about one quarter as frequent as the late form, but many patients have both forms associated. Forty per cent. of patients have asthma as a complication. This type of asthma requires no special treatment and is usually well controlled by the pollen injections.

SEASONAL TREATMENT

Treatment of patients, who present themselves after onset of symptoms, is advisable, although it does not offer the same promise of good results as preseasonal treatment does.

Cases are classified as above, the eye tests being omitted. Doses are small, injections being given daily, or on alternate days, with a view of enhancing the patient's immunity as rapidly as possible. In about fifty per cent. of the seasonal cases the patients do well under treatment.

DRUGS

The following prescription will be found useful during the season. These eye drops may be used freely. One or two drops being instilled into each lower eyelid controls not only the eye irritation but also helps the nasal symptoms.

Cocainæ Hydrochloridi	gr. 1
Adrenalin Chloridi (1-1000)	℥ 1
Acidi Boric	gr. XX
Aq. Rosæ q. s. ad	℥ 1

The preseasonal treatment of hay fever offers the best opportunity for relief to the patient. In general we can offer some measure of relief to over ninety per cent. of our patients; about twenty-five per cent. are entirely relieved; about fifty per cent. moderately helped, and in only about five per cent. of our cases are we at the present time unable to be of any aid.

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Instruments, Apparatus, and Clinical Notes

The Value of the Duodenal Tube to the Surgeon in the Postoperative Treatment of Certain Cases of Gastroenterostomy*

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Remembering that "to save life" is the primary aim of the calling of the medical man, the following observation deserves recording:

Case I.—S. G., female, thirty-eight years old, had complained of gastric disturbance for the last five years. A number of specialists had been consulted. Proper diet with internal medication, and later regular stomach lavage done by herself, kept her alive. In May, 1924, she came under the care of Dr. Einhorn. The radiograph (Fig. 1) best explains the status: typical hourglass stomach, complicated by a tight pyloric stenosis. The gastric constriction was situated about midway between cardia and pylorus, dividing the stomach into two pouches of almost equal size. The proximal pouch shows no six hour residue of the barium meal, the distal emptied slowly (Fig. 2). The patient had lost steadily, weighing now eighty-four pounds, but continued to do light work in her mistress's home—the latter, as well as the other members of the family had been friends to her rather than employers.

Fig. 1.—Typical hourglass stomach with pylorostenosis.

Fig. 2.—Slow emptying of distal portion.

Operation, the only procedure that promised hope for relief, was clearly indicated.

On May 2, 1924, the abdomen was opened under gas oxygen anesthesia. The stomach appeared as seen in the x ray films; it was extremely anemic and thin throughout. The stricture, midway, was of cicatricial character, evidently the result of a peptic ulcer. A second benign stricture involved the pylorus. In view of the normal emptying of the cardiac pouch and the marked stenosis of the pylorus, typical posterior gastroenterostomy was done between the distal pouch and the jejunum; short loop, needle and thread. At the completion of the suturing, and although no blood whatever had been lost and only oxygen used throughout the intraabdominal work which had been hurried as much as feasible, the patient's general condition forbade the immediate addition of the planned gastrogastrostomy. The parietal wound was quickly sutured and the patient returned to her bed. stimulated by hypodermic injections, rectal instillations, etc.

The first days passed comparatively satisfactorily, there was hardly any antiperistalsis. On the fourth day after the operation, with increase of intake and with rectal temperature at or below 100°, uncontrollable vomiting set in. Medication, gastric and colonic lavage brought no relief. Some tea was retained, but as soon as any nourishing liquids entered the stomach they were promptly rejected. After a few days of watchful waiting jejunal feeding or jejunostomy was

(*Continued on page* 321)

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Further Observations on the Treatment of Neurosyphilis with Tryparsamide

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In June, 1924, Stokes and Wilhelm reported the first eighteen months' experience with tryparsamide in the treatment of patients with neurosyphilis and nonsyphilitic diseases of the nervous system at the Mayo Clinic. We have carried on the observation and treatment of the same group of patients except that those with advanced paresis, who were treated while inmates in the Rochester State Hospital, have been excluded, and that seventy-five patients who were started on treatment with tryparsamide since June, 1924, have been included. Altogether we have treated 207 patients with tryparsamide, but as this clinical and serological study is limited to those who have received at least two full courses (twenty injections) of the drug, only 113 of the case histories are reviewed.

In the previous report Stokes and Wilhelm classified the patients into six groups; we have added a seventh. They are as follows: 1, early general paralysis, confirmed by clinical and serological observation; 2, paresis sine paresi of Solomon, or asymptomatic paresis of Lorenz and Loevenhart; 3, tabes dorsalis without gastric crises; 4, tabes dorsalis with gastric crises; 5, congenital neurosyphilis; 6, nonsyphilitic diseases of the nervous system, such as multiple sclerosis, and 7, unclassified forms of symptomatic neurosyphilis. It should be emphasized at this point that the patients classified in Group 1 were in the early clinical phases of general paralysis. With few exceptions none of the patients was sufficiently advanced to warrant institutional care and in most instances the diagnosis made at the first examination was confirmed while intensive treatment with arsphenamine and mercury was being given. Group 2 includes patients who showed no clinical signs of general paralysis but whose spinal fluid remained persistently positive in spite of intensive treatment. Practically all of this group had persistent first zone colloidal benzoin reactions. The remaining groups are selfexplanatory.

The evaluation of a new drug or method of treating the parenchymatous form of neurosyphilis must not be based on serological changes alone. In fact, in this form of neurosyphilis improvement in the clinical signs of the disease is of more significance than serological reversals. The reports (2, 3) from the Mayo Clinic have called attention to the fact that clinical improvement in cases of symptomatic neurosyphilis is not always paralleled by serological improvement and, that serological reversal to normal is not always followed by clinical improvement. Wile and Wieder have also called attention to this point. We are not justified in seeking changes in the objective signs of this phase of the disease.

In this study evidence of clinical improvement was based on the somatic changes; improvement or disappearance of chief complaint; the mental improvement estimated by employer, family and neuropsychiatrists; restoration of earning capacity; restoration of personality; changes in personal appearance, and gain in physical strength and weight. The serological results were estimated both separately and in conjunction with the clinical results. The reversal of the Kolmer, Nonne globulin test, cell count and the colloidal benzoin to normal or negative, was considered "reversal to normal." If the pleocytosis was reduced to the point where the number of lymphocytes was normal and the Kolmer reaction reduced to a weak positive the condition was considered as improved. The changes in the Nonne and colloidal benzoin were not estimated. The tryparsamide was given in courses of ten injections each, from one to three gm. being administered at weekly intervals in conjunction with potassium bismuth tartrate with butyn, 0.2 gm. every five days, or mercury succinimid one sixth to one quarter grain five times a week for six weeks, or mercury salicylate one to two grains once a week. If the interval between the tryparsamide courses was two months or less no treatment was given between courses; if greater than two months, mercury rubs were given.

Group 1.—Of the fifty patients with early general paralysis treated with tryparsamide twelve per cent. showed a definite remission, sixty-six per cent. im-

proved in one or more ways, and twenty per cent. showed a reversal of the spinal fluid reactions to normal. Thirty-two per cent. showed improvement in the condition of the spinal fluid and sixteen per cent. a reversal of the blood Kolmer reaction to negative (tabulation). This estimate of clinical improvement is based on subjective improvement noted by clinical observation or reported by the patient's relatives or home physician, and it is not to be construed as clinical cure. The estimate of improvement has been arrived at in some instances by the disappearance of a single symptom, in others of multiple symptoms, and the reader should bear in mind that clinical improvement means subjective improvement. The clinical cures or complete remissions in this same group are estimated at twelve per cent., a figure which approximates the majority of estimated spontaneous remissions in cases of general paralysis (from four to twenty-one per cent., average of eleven per cent. from seventeen reports in the literature).

Solomon and Viets have recently called attention to the point that the greater the number of injections of tryparsamide the better are the serological results. Our study confirms this observation, in that patients who received the greatest amount of treatment responded better serologically. Of eleven patients in the group who had been intensively treated with slight benefit by arsphenamine intravenously, intraspinal medication, and mercury and iodids before receiving tryparsamide, five showed decided serological and clinical improvement after the tryparsamide, indicating that tryparsamide would sometimes accomplish results when routine measures fail. On the other hand, of thirty-five patients who had received practically no antisyphilitic treatment previous to the administration of tryparsamide, only five responded favorably to the drug. From these results it would seem that in a certain group of patients with parenchymatous neurosyphilis tryparsamide is beneficial as a "finishing off" form of treatment, but we know of no means of selecting, before hand, the patients who will respond well to tryparsamide.

Group 2.—Fifteen patients with asymptomatic paresis were treated intensively with the usual measures, but their spinal fluid and blood serum remained persistently positive, which suggested incipient parenchymatous degeneration. There were no clinical symptoms of paresis in any members of this group. In one case there was complete reversal of the spinal fluid reaction to negative, one patient was decidedly improved, and eight others had gained weight and were in better condition to carry on their occupations. In brief, more than half of the group manifested the tonic effects of the drug, a point which has been noted previously. In only one case was there serological reversal to normal. The blood Kolmer reaction became negative in four cases and was unchanged in the remaining eleven.

Group 3.—Fourteen patients with tabes dorsalis were treated with discouraging results. These patients were divided into two groups; those who had received the usual intensive treatment but who did not respond clinically, and those with advanced disease in whom symptomatic improvement only was sought. One of the patients who had previously been given the usual intensive treatment showed decided benefit from the tryparsamide course; there was complete reversal of the reaction of fluid and decided clinical improvement. Six others were improved serologically and two were somewhat benefited clinically. There were no significant changes in the Kolmer reaction of the blood.

Group 4.—Stokes and Wilhelm called attention to the possible value of tryparsamide in the treatment of tabes dorsalis complicated by gastric crises. Case 6, in their report, is the outstanding example of the effect of this drug in this condition. The patient had been treated energetically for six years by intensive methods with no improvement. Following the first course of tryparsamide there was a complete cessation of the crises for ten months; during this time he received two more courses. Since the relapse of the crises the continued use of tryparsamide made the severity and frequency of the attacks less than it was before the drug was used. Two other members of this group of eleven patients were slightly benefited, the intervals between attacks becoming longer and the duration of the attacks shorter and less severe. In one case there was a complete reversal of the spinal fluid reactions to normal, but no improvement was noted in the gastric crises. In another there was a reversal of the Kolmer reaction on the blood from positive to negative without symptomatic improvement. It is to be regretted that the promise offered by Case 6 in the report of Stokes and Wilhelm has not been duplicated in any others in this group. All these patients had the usual form of intensive treatment before receiving tryparsamide.

Group 5.—Six children with congenital neurosyphilis were treated; five had paresis, and one tabes dorsalis with gastric crises. Two of the group were slightly improved symptomatically, particularly in that they were more easily managed by their parents, and two showed serological improvement.

Group 6.—The fourteen patients in the nonspecific group having multiple or combined sclerosis and two with erythema induratum were not benefited beyond slight gain in weight.

Group 7.—In this group are included seventeen patients with undifferentiated types of syphilis of the central nervous system of whom an anatomic classification is not as yet justified. In some of these cases the symptoms bordered on those of asymptomatic paresis while other cases were included because of continued relapses in the spinal fluid and blood when treatment was stopped. Several cases of the diffuse cerebrospinal group were included. One of the patients with the diffuse cerebrospinal type of disease was markedly improved subjectively while six were slightly benefited. Improvement was noted in the spinal fluid of six, but no significant changes in the Kolmer reaction on the blood were recorded.

MODIFICATIONS OF THE USE OF TRYPARSAMIDE

When we first began the use of tryparsamide it was given in conjunction with mercury salicylate or bichloridol; later, in conjunction with the daily injection of mercury succinimid with or without mercury rubs in the interval; and more recently with potassium bismuth tartrate with butyn, 0.2 gm. every five days or once a week for twenty injections. In reviewing the entire series it appears that the patients who received bismuth showed more improvement than those who were given the various mercurial

preparations, but it will be necessary to carry this observation further before making deductions. The use of tryparsamide in alternation with intraspinal medication every two weeks according to the Swift-Ellis-Ogilvie modification (arsphenamine reinforcement) did not give as good results as tryparsamide alone. Likewise, weekly injections of tryparsamide followed by spinal drainage every two weeks did not improve the clinical or serological results.

The more intensive use of tryparsamide seems to offer more encouraging serological results. A total of seven courses, or seventy injections of tryparsamide, is the most we have given to one patient. In our experience the outstanding clinical improvement has, in the majority of cases, followed the first or the second course rather than the fourth, or subsequent courses. The patients in the group which showed reversal of the spinal fluid reaction to normal received an average of thirty-four injections before the serological reversal was noted, whereas the patients in the group which showed the maximal clinical improvement received an average of slightly less than twenty injections.

CLINICAL AND SEROLOGICAL RELAPSE

The patients who showed clinical or serological improvement were especially studied for evidence of clinical or serological relapse.

In the group of patients with paresis there were two whose fluid reaction reversed to normal following tryparsamide but relapsed when treatment was discontinued. Five others had repeated meningeal relapses, as evidenced by the marked increase in the cell count during the intervals between treatments. In the entire group of 113 patients there were fourteen whose spinal fluid reaction showed a definite improvement or reversal to normal following the administration of tryparsamide, but a relapse during the intervals. The estimate of relapse was based on the increase in the cell count and reversal of the Kolmer reaction. There were three patients with paresis who had a clinical relapse following definite subjective improvement, and also a patient with gastric crises who was definitely relieved for ten months after all other therapeutic measures had failed.

Tryparsamide exerted no greater influence in preventing the clinical or serological relapse than did routine treatment. Those who had shown a tendency to relapse under the usual measures continued to do so under tryparsamide.

COMPLICATIONS

In reviewing the visual complications the entire series (207 cases) was studied. A member of the section on ophthalmology examined all patients who were considered candidates for tryparsamide treatment and those who showed evidence of syphilis of the optic nerve or its constituents were excluded. Twenty-three patients (10.6 per cent.) complained of visual defects while under treatment; the defects in nine of these (4.3 per cent.) were associated with objective findings, while in fourteen (6.8 per cent.) they were subjective complaints and showed no changes in the fields or fundi. The subjective complaints were dazzling lights, blurred vision, and visual hallucinations. In five of the group which showed objective findings the findings were permanent. Three of these had persistently contracted fields and two a homonymous hemianopsia. There were three patients with tabes dorsalis who were found to have early signs of optic atrophy subsequent to several courses of tryparsamide, and two patients with advanced optic atrophy who had only light perception did not lose what vision they had after three courses of tryparsamide. The cause of the visual complication is not as yet understood although we believe that Lillie's conception, that syphilis and not tryparsamide, is frequently the factor, is still tenable.

Our experience does not permit us to ignore subjective complaints, nor do we feel justified in continuing treatment unhesitatingly when such complaints are present. In most cases the subjective complaints are transient, but occasionally if treatment is continued it will result in permanent damage. The cases in which the contracted fields were permanent were all of the tabetic type; in none of the frank cases of paresis were any of the visual complications permanent. This study confirms the observation of Young and Loevenhart that the great majority of the optic complications appeared during the first course of treatment, in our series on an average with the fourth treatment, although there were two cases in which the objective findings appeared after the twenty-first and twenty-fifth injection, respectively. One patient had received a combined course of five injections each of tryparsamide and arsphenamine in alternation. On his return for the second course, tryparsamide alone was given, and following the fourth injection he developed a contraction of the fields which cleared up when he received daily intramuscular injections of mercury succinimid and sodium iodide intravenously.

RESULTS FROM TREATMENT WITH TRYPARSAMIDE IN 113 CASES OF NEUROSYPHILIS OBSERVED FOR THREE YEARS

		Cerebrospinal fluid		*Clinical results*			*Blood Kolmer reaction*	
Symptoms	*Cases*	*Complete reversal of all factors to negative*	*Serological improvement*	*Marked improvement*	*Slight improvement*	*No change*	*Reversed to negative*	*Unchanged negative or positive*
General paresis	50	10	16	6	33	11	8	42
Asymptomatic paresis	15	1	8	1	8	6	4	11
Tabes dorsalis without crises	14	1	6	1	2	11	..	14
Tabes dorsalis with crises	11	1	2	1*	2	8	1	10
Congenital neurosyphilis	6	..	2	..	2	4	..	6
Unclassified	17	..	6	1	6	10	..	17

*Relapse in ten months.

The administration of tryparsamide was followed by various other complications: jaundice, a mild exfoliative dermatitis, and a late nitritoid reaction. Each was noted once. The evidence does not warrant attributing the jaundice solely to the tryparsamide. The attack was mild and did not persist with the continued use of the drug. The dermatitis appeared in a patient with a history of an eczematoid dermatitis of hands and face of many years' standing. He had previously undergone four courses of arsphenamine without a cutaneous reaction. The dermatitis was relatively mild and responded readily to treatment. However, the use of tryparsamide was discontinued. The nitritoid reactions were observed during the sec-

ond course in a patient with paresis. The reactions were partially controlled by employing the Bezredka technic, as recommended by Stokes, for the remainder of the course. Following the second injection of the third course (dose two gm.) the reaction recurred and became increasingly worse with each of the three subsequent injections, so that eventually it was discontinued. The reaction came on from three to five hours after the injection with flushing, tachycardia, nausea, vomiting, dyspnea and backache. It lasted about one hour if untreated, but was controlled readily by the use of epinephrine. Another patient had nausea and vomiting with each injection but this was a psychic phenomenon.

In the treatment of the complications we have administered sodium thiosulphate and alkaline potions. When the patients presented optic complications mercury given intramuscularly and iodids have been beneficial, although, of course, in many cases the subjective visual complications disappear spontaneously.

CONCLUSIONS

The use of tryparsamide at the Mayo Clinic extending over a period of three years, in 207 cases, leads us to believe that although its use is still in the experimental phase, tryparsamide is of value in the treatment of the paretic type of parenchymatous neurosyphilis. It does not seem to offer as much encouragement as the treatment of general paresis with malaria but it is available for those not suited to the risk of the latter treatment. Our evidence, based on subjective and serological improvement, justifies the assertion that there is a certain small group of patients with early paresis who derive marked benefit from tryparsamide. In seven cases in the whole series there was a complete reversal of the spinal fluid findings to normal but no associated clinical improvement. We were unable to ascertain the clinical and serological criteria by which to determine beforehand the patients with paresis who will improve. The objective visual complications offer a hazard (4.3 per cent.) which could not be prevented by special precautions. The mechanism of this complication has not as yet been described. The use of bismuth intramuscularly in conjunction with tryparsamide seems to offer better therapeutic results than either given alone. The low cost, availability, and small percentage of complications and reactions are among the advantages of the drug. The continued clinical use of tryparsamide may eventually determine the niche in the armamentarium of neurosyphilitic treatment in which it is to fit with the most encouraging results, but until that time its use is warranted as a valuable adjunct in the treatment of the patient early in the course of general paresis.

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General Pathology of Syphilis in the Primary Phase

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The older physicians did not attribute the same importance to the primary phase of syphilis as we do today. The classical writers merely looked upon the chancre as the point of entrance preceding the symptoms of constitutional infection. The diagnosis of the primary sore was often left in suspense until the presence of the secondary manifestations and treatment was not begun before the development of the roseola. This practice had its *raison d'être* in the doubt which so often existed in respect of the diagnosis of an infecting chancre, a doubt which was not cleared up until several weeks had elapsed, in other words, after the purely local infection had become generalized.

Some observers even went further and advised abstaining from treatment in cases where there was no doubt whatsoever as to the specific nature of the primary lesion. It was maintained that immediate treatment might have as a consequence to impede the normal resistance of the organism in respect of the syphilitic injection and, consequently, would favor its ultimate development and generalization of the morbid process. It is clear that the mercurial treatment used was in most cases quite incapable of preventing the outburst of general accidents and the most to be expected of it was to delay somewhat their appearance. Hence it came to be readily understood that the primary phase did not offer any particular interest.

Today our conceptions have decidedly changed and there is now no syphilologist who does not consider that it is during the first few weeks of the disease that the chief acts of the drama are played, whose multiple consequences will later ensue. It is during this phase that the spirocheta, after local proliferation, invades the entire system; it is during this phase that in a large measure depend the various specific localizations which will become apparent during the

evolution of the disease; it is during this phase only that treatment may, if properly carried out, definitely control the affection. One can therefore affirm that the primary phase of lues is the most important phase of its evolution. For this reason it is absolutely necessary to understand precisely the phenomena succeeding each other during the first and second periods of incubation and to know the different dates at which these phenomena occur.

PROGRESSION AND DISTRIBUTION OF THE SPIROCHETA

1. *First incubation.*—This includes the time elapsing between the inoculation of the treponema in the tissues and the appearance of the clinical symptoms characterizing the chancre. This period has an average duration of from twenty-five to twenty-eight days. The length of incubation of syphilis is due to the fact that the treponema encounters some difficulty in becoming acclimated to its new conditions of life and nutrition, and it does not succeed in multiplying until it comes in contact with living cells, especially the endothelium lining the lymphatic vessels (Lévy Bing and Laffont). So soon as they have penetrated a new organism, the spirochetæ divide up into several distinct groups.

Some remain on the spot of inoculation. These are those who by their proliferation will give rise to the primary accidents. The existence of this group of spirocheta has been sufficiently demonstrated by the appearance of the chancre at the point of inoculation. The classic writers already taught the first lesion of lues always arose at the point where the virus had penetrated; the discovery of the treponema and experimental work have furnished the incontestable proof of this affirmation. Hence it is an acquired fact that proliferation of the spirocheta takes place on the spot.

From the onset of the first incubation a certain number of spirochetæ directly penetrate into the general circulation. The existence of this group of treponema is no longer a matter of doubt and is based upon the experiments carried out by Neisser. He has, in fact, shown that quite a time before clinical appearance of the local manifestations in inoculated monkeys, a number of spirochetæ take the blood route to reach, and become fixed in, the various viscera, especially the lymph nodes, spleen, bone marrow, and testicle. Therefore early invasion of the circulation is not only possible, but certain.

Lastly, the third group of parasites travel up the lymphatic tract. This penetration of the infecting organism into the lymphatic system takes place slowly and progressively, but surely, starting from the point of inoculation and attaining the first regional lymph node. This is so true that the satellite adenopathy of the chancre has always been regarded as of as much or even more diagnostic value than the clinical aspect of the primary sore itself. We know that the enlarged lymph node can be detected almost immediately after the appearance of the chancre; therefore it is clear that the local lymphatic tract is invated already in the first incubation.

2. *The syphilitic chancre.*—While the phenomena mentioned are taking place, the primary sore begins to appear at the point of inoculation. I have no intention to describe a syphilitic chancre, and would only draw attention to a few of its characters. It is, in reality, a superficial wound, or erosion, has a smooth fundus, ham red in color, regularly round or oval in outline, and reposes upon an indurated base. Curiously enough, histologists have shown that the induration of the chancre is not invariably in proportion to the lymphocytic infiltration and it may well be asked whether or not it is partially due to a phenomenon vastly different from leucocytic reaction arising against ordinary infections. There is a striking fact, namely, that by successive subcutaneous injections of serum into animals one can, as Arthurs has shown, at length produce an indurated infiltration at which point a thick, whitish, aseptic exudate will soon appear and will end by the elimination of a patch of gangrene. It is not at all impossible that the induration of the primary sore, if not its other characters, may be dependent upon a similar reaction resulting from the incessant arrival at the same spot of toxins derived from the spirocheta.

The syphilitic chancre is not always the same in each case. Sometimes it is seen as a minute erosion reposing on no induration whatsoever, or only to a trifling one. On the other hand it may appear in the form of a mummulary wound surmounting a nodular induration or it mav assume the aspect of a deep ulcerating process. These differences may be due to microbic associations, but generally they are dependent upon the local reactions of the subject or to allergic phenomena. We now know that allergy is not absolutely specific, therefore it is not at all astonishing that it may manifest itself at the time of the first accident produced by syphilitic infection.

According to some observers syphilis may exist without the development of a chancre. This opinion requires careful examination. It is true that one frequently meets with patients presenting more or less late specific lesions who have no recollection of having previously been infected. These are instances of so-called unknown syphilis and they are legion. But it does not follow that a chancre has not previously existed, and with Fournier we may admit that the initial sore has simply passed unnoticed. This supposition appears to be all the more acceptable because the majority of these cases occur in women.

However, some observers have recorded cases of syphilis without a chancre, which, at first sight, seem to leave little room for doubt. These are instances of young men who after a suspicious coitus have been carefully followed by their physician from the time of the suspected contamination to the development of the primary accident. It is true that such cases are not numerous since Gerbay in a recent study, has only been able to collect fifteen that appear to him to be authentic; on the other hand, it is clear that even in the male an absolutely complete examination is a difficult matter and certain rectal or urethral chancres must of necessity pass unnoticed by even the most competent practitioner. It is not even certain that the primary accident may not occasionally develop in certain mucosæ of the internal organs, such as the stomach, as Nicolan appears to admit.

Another striking thing is that in all these cases, the observers have noted the presence of the stellite adenopathy. This fact alone is enough to make the nonexistence of the syphilitic chancre doubtful. But this is not all, because in these various instances the

adenopathy has developed exactly as when a chancre has been detected, while the secondary accidents have appeared within the normal lapse of time. Consequently, in all these cases, the chancre has unquestionably existed although it escaped detection.

Why these conclusions? Because the evolution of syphilis without a chancre—some undoubted examples of which are to be found in the literature—is quite different. Usually they are cases of physicians who have pricked themselves during a surgical operation and later presented secondary lesions although no initial sore developed at the site of inoculation. All these cases, excepting the one recorded by Walloch, are different from the others because there was absence of the satellite adenopathy and the early appearance of the roseola not later than the thirty-third day following the inoculation (Julien's case); otherwise five to six weeks sooner than in ordinary cases. This evolution is clearly that of syphilis at the first onset, because it corresponds with what we know of experimental lues by injections of the spirocheta directly into the general circulation in animals.

Therefore it has been experimentally shown and in certain very exceptional clinical circumstances realized by deep inoculation of the treponema into the blood vessels, that syphilis may develop without a chancre. It is, however, nevertheless true that in practice, acquired symphilis always begins with a primary accident and that today we still can confirm Fournier's statement that cases without a chancre are almost always "incompletely . . . observed cases whose exordium has been overlooked and whose initial history has remained unrecognized for some reason or other."

3. *The second incubation.*—From the onset of the chancre, the disease enters upon a new phase of its evolution, viz: the second incubation. This period whose total duration is about six weeks, ends with the appearance of the secondary accidents. We have pointed out that at the end of the first incubation, the spirochetæ are divided into three groups; it is now time to follow their ulterior career.

The treponema which have remained at the point of inoculation and have given rise to the chancre more or less completely disappear. Destroyed by local organic reactions, they play no part in the generalization of the syphilitic process. The proof of this disappearance is furnished by normal and usually definitive cicatrization of the sore. During the second, as during the first incubation, a few spirochetae pass directly into the general circulation (Frühwald). This is the result of the persistence of blood emboli.

During this phase there is a progressive invasion of the lymphatic system, the onset of which, as we have shown, is during the first incubation. Consequently two routes appear to be freely open to generalization: the general circulation and the lyphatic system. Which of these is the most important? This question must now occupy our attention. My personal conviction is that invasion of the organism essentially takes place by the intermediary of the lymphatic system. This opinion is the outcome of a paper written with the collaboration of Dr. Weyl. (1) We would here develop our point of view and later will discuss the arguments put forward in favor of generalization by way of the circulation.

Although early invasion by way of the circulation has been absolutely demonstrated, it does not necessarily follow that this septicemia offers great practical importance. On the contrary, it would seem that here we are dealing with minute emboli, composed of a few parasites whose life is ephemeral. These emboli are perhaps responsible for certain visceral lesions of rather late development, but they certainly do not play any part in the eclosion of the secondary manifestations. Later on we shall furnish many proofs sustaining this view; it is, however, interesting to remark that the roseola is absent from the symptomatology of hereditary syphilis, which as is well known, is from the onset, a blood syphilis.

The penetration of the lymphatic system by the infection plays, on the contrary, an important part in the generalization of the disease. It is upon it, and it alone, that the subsequent evolution of the affection appears to depend, and it is the only occurrence upon which depends the development of the roseola. This route of extension of the infection has not need of any lengthy demonstration.

The appearance of successively infected lymph nodes, as is clearly made evident by the cervical lymphatic chain in cases of chancre on the face, furnishes the clinical proof (Sabaréanu). On the other hand, the well known plate published by Fournier concerning the abdominal lymphatics of a subject who died accidentally during the second incubation of a genital syphilis, gives us the anatomical demonstration.

After having progressively broken through several clusters of lymph nodes, the spirocheta attains the thoracic duct and then the subclavian veins and from this time on, the secondary phase is theoretically constituted. This "major septicemia can in no way be compared wtih the tiny swarms of spirochetæ entering the blood stream during the first incubation. In the circumstance under consideration we are witnessing a pouring *en masse* of the treponema into the blood stream. This violent entry into the blood in all probability takes place with great rapidity, since the eclosion of the secondary accidents as a rule ensues at once and from the start the lesions are generalized.

This conception is corroborated by the fact that the time of the appearance of the roseola is considered advanced when the primary accident arises on the face instead of the genitalia (Gaucher and Milian, Luisi). In these circumstances how can one explain the very early development of secondary accidents if not by the fact that the distance covered by the treponema from its point of inoculation to the general circulation is very much shorter and that the number of clusters of lymph nodes capable of hindering its onward progress are fewer. Hence the appearance of secondary symptoms is governed by this pouring of the spirocheta *en masse* into the great lymphatic tract and then into the subclavian veins. It is only after having progressively travelled through the entire extent of the lymphatic system that the treponema penetrates into the general circulation.

It is of the highest practical importance to know at what time this penetration into the circulation occurs; otherwise put,—what date in the primary evolution corresponds the generalization of the disease. Now it is possible to affirm that it takes place from

ten to fifteen days before the appearance of the roseola. This affirmation rests upon the following four data:

1. If at the onset of the second incubation the subject be inoculated with the serum taken from his chancre the result will usually be positive if the point of inoculation be somewhat distant from the primary accident (Wallace, Auspitz, Poutoppidan, Queyrat). Now, the lesion provoked by reinoculation, should it become apparent within the ten last days of the second incubation, is not the same as when it is already positive before this date. Sabaréanu has in point of fact shown that when the inoculated accident manifests itself sufficiently soon, that is to say, more than ten days before the roseola, it assumes the aspect of a chancre, while in contrary circumstances only a pupule appears; otherwise put, an aborted chancre or a lesion of secondary type. This difference can only depend upon the question of cutaneous immunity. Absent during the first few weeks of the primary phase, this immunity begins to show itself ten days before the secondary eclosion. Its onset certainly coincides with the generalization of the infection (Hudelo) and this generalization therefore precedes the roseola by ten days.

2. We know that the early secondary accidents produced by an irritation are met with only during the ten to fifteen days preceding the appearance of the roseola. The fact is that before this date the spirocheta has not reached the skin and also previous to this date the septicemia has not developed.

3. Yet another proof of what I maintain is furnished by the fact that a pregnant female who contracts syphilis during her gestation generally gives birth to a healthy child if she has contracted lues during the two last months of pregnancy (Ricord, Diday, Priem, Sabaréanu). Consequently it is only after the sixtieth day following contamination that a mother can syphilize her offspring, otherwise put, the spirochetal septicemia is only constituted from this date on. If we take twenty-five days as the average time of the first incubation, and forty-five days for the second, we obtain a total of seventy days; otherwise, ten days earlier.

4. Finally, experimental data agree with clinical findings. Finger and Landsteiner have shown that the duration of incubation of experimental inoculation in the monkey during the second incubation is from ten to fourteen days. Whether the spirocheta is derived from the blood or from an experimental inoculation, this lapse of time must remain the same. The spirocheta consequently reaches the skin ten to fourteen days before the eclosion of the secondary accidents. For all these reasons it is clear that the septicemia precedes the roseola from ten to fifteen days.

To sum up, it may be said: if from the first incubation the spirochetæ become divided into three groups, the local, the blood, and the lymphatic groups, only one of them retains importance for the outcome, namely, that one which progressively invades the lymphatics. This extension is of long duration because the treponema must successively break through a rather large number of lymph nodes which offer just so many barriers. It is only from ten to fifteen days before the development of secondary symptoms that the infection reaches the general circulation and it is from this time that generalization of the process dates.

Such is my personal conception of the process but it is not the one accepted by the majority of modern syphilologists. Since the time when Neisser demonstrated that the blood and certain viscera may be cirulent a few days after inoculation, the number of partisans of generalization by the circulation has continued to increase. It is far from my thought to deny the existence of these septicemias arising at the very onset, as these have been clearly demonstrated to exist and are above any discussion. It is certain that during the first incubation a few spirochetæ have entered the tissues, especially the lymph nodes, spleen, testicle, and bone marrow. But it does not necessarily follow that this generalization via the circulation offers practical importance. On the contrary it is probable that the few spirochetæ drawn directly into the general circulation are for the most part rapidly destroyed, because we know of no specific lesion which is unquestionably dependent upon these early septicemias. The treponema can at most be held responsible for a few later visceral lesions; it certainly plays no part in the production of the secondary eclosion.

Gerbay, who has recently published a very interesting paper entitled, The Bordet-Wassermann Reaction and the General Pathology of Syphilis During the Primary Period is a warm partisan of generalization via the blood. This observer, whose opinion reflects that of many modern syphilologists, bases his arguments essentially on the writings of Neisser, to which I have referred, and upon the fact that "the first lesions produced by the treponema at the spot of inoculation, are lesions of the blood vessels." He relies principally on Darier's histological description of the chancre: "The treponema especially multiply in the walls of the blood vessels and from them appear to migrate into the vascular lumen, which, from the viewpoint of generalization of the infection, is highly important; others invade the connective tissue fasciculi and space from whence the lymphatics transport them to the lymph nodes."

From this description it is evident that the spirocheta is lodged especially in the vascular walls, but it is also said that they appear in part to emigrate into the lumen of the vessels, in part into the lymphatics. Levaditi and Manouélian have demonstrated their presence in the lumen of the superficial capillaries of the dermic papilæ and in the albuminous contents of the dilated lymphatic spaces. Lévy-Bing and Laffont recall that the blood of syphilitics is contagious and they add: "From microscopical studies of human or experimental chancres it has been shown that the treponema is also met with in the lymphatic dilatations present in the neighborhood of the chancre. Therefore from these findings it is logical to admit that the treponema selects the circulation for its dissemination throughout the organism and preferably, perhaps, the lymphatic route." And further on they say: "The spirocheta is only successful in multiplying when in contact with living cells and among these it seems to prefer the epithelia, as well as the endothelium lining the lymphatic vessels."

Histology therefore does not demonstrate that the treponema of the chancre preferably invades the general circulation. On the other hand, clinical studies

distinctly prove that it is in the lymphatic spaces that the gross masses of the parasite are to be found. In point of fact, it is easy to demonstrate microscopically the presence of the spirocheta in the primary accident if one is careful to obtain serum from the lymphatic spaces and in so doing not to cause bleeding. To conclude, it may be said that both routes, the blood and the lymphatics, appear to be equally open to the generalization of the infection. The essential is to ascertain which of the two is the most important.

To do this we must leave aside this statistical study in order to approach the dynamic study of data which characterize the primary evolution. Now here no doubt exists; the principal generalization takes place by the lymphatics. Why? Because the hypothesis of blood generalization explains nothing. In particular it does not explain why the roseola only appears about seventy days after contamination, instead of appearing at the latest on the thirty-third day as in cases of direct blood inoculation. Neither does it explain why the secondary accidents occur earlier when the primary accident occurs on some part of the head instead of on the genitalia. On the contrary, lymphatic generalization explains everything. The very late appearance of the secondary phenomena is due to the long distance that the spirocheta must cover in the lymphatic system before being poured into general circulation. The early appearance of roseola in cases of chancre on the head or face results from the fact that the parasite has a much shorter distance to cover from the point of inoculation to the general circulation and the number of clusters of lymph nodes, which hinder its progress, are much fewer. Lymphatic generalization also explains why a female, syphilized during the last two months of gestation, usually gives birth to a healthy offspring, and that general immunity, as we shall attempt to show, is hardly ever constituted before ten days preceding the eclosion of the roseola.

The partisans of generalization via the blood stream are of the opinion that the roseola only appears seventy days following contamination, because the lesions of the integument become apparent only when the cutaneous allergy is sufficiently developed. Given the fact that certain cases of syphilis rapidly become allergy (early malignant syphilis) and that others are never allergy (tabes dorsalis, general paresis), the development of the roseola should be, as is the case of tertiarism, variable as to time, which is not the case. On the other hand, it would have to be admitted that allergy is always earlier when the chancre is cephalic and that it is still more rapidly constituted in cases of direct blood inoculation, which is an impossibility.

Dr. Gerbay maintains that my conception "does not appear exactly to correspond with what we know of the normal and pathological lymphatic circulation." In his opinion we must make two distinctions; firstly, the lesions of the lymphatic system, and secondly, the transportation of the treponema by the lymphatics up to the general circulation." He goes on to say: "This adenopathy and lymphangitis progresses slowly and the anatomical changes likewise. But how can it be admitted that the treponema contained within the lumen of the lymphatics cannot be carried by the circulating lymph beyond the diseased portions into unaltered vessels?"

Things would clearly take place in this way if, along the course of the lymphatics, there were no lymph nodes whose principal function is to oppose rapid generalization of the infection. In all reasonable probability the spirocheta cannot break through them until it has multiplied for some time. Each lymph node represents a relay from which the treponema cannot escape until it has remained for a certain length of time. When once the last relay has been passed the parasite is poured *en masse* into the thoracic duct and this phase corresponds to what I have called the major septicemia.

Lastly, there is an argument that I have frequently encountered in favor of generalization via the circulation, namely, the uselessness of excision of the syphilitic chancre. I am unable to see why this fact, although in itself perfectly true, should demonstrate that organic invasion selects one route rather than another, since it is proved that at the time of the appearance of the primary accident, the spirocheta has already reached the regional lymph nodes.

CONCLUSION

The generalization of syphilis essentially takes place by way of the lymphatics.

Immunity. For years the profession supposed that syphilis was not reinoculable because one infection conferred immunity in every way similar to that occurring in most infectious diseases. At the present time we know that all this is exploded and that a subject cured of his syphilis is immediately susceptible of contracting a new infection. "The refractory state of those formerly syphilized merely consists of a persistent state of syphilitic infection and not a state of immunity." (Nicolas.) We even know that there is hardly any phase in the syphilitic evolution in which immunity of the skin is absolute in respect of spirochetic inoculation, although in the vast majority of cases the production of a new chancre does not ensue, but in its stead an accident offering the symptomatology of the phase considered appears. Hence there is no true immunity to syphilis, taken in the sense of microbic infections in general. Yet syphilitic immunity is not a vain word; thoroughly to understand it, it is enough to recall that lues, being due to a flagellated organism belonging to the family of trypanosomides, the real immunity it confers is to be compared with that of other spirilloses. Levaditi has shown that animals suffering from trypanosomiasis (nagana or surra) are refractory to a new inoculation. The trypanosoma which is destroyed *in vitro* by the animal's serum has, on the contrary, acquired a more or less absolute insensibility in respect of the trypanosomolytic antibodies, because the blood of those animals contains trypanosome. If these data be applied to syphilis it may be assumed that a subject may harbor the spirocheta for forty or fifty years while his skin and mucosæ will not react to a new inoculation. But so soon as he is freed from his blood infection, whether a complete cure has been obtained or his affection has become distinctly localized, he is susceptible of being again newly infected. (Fordyce.)

From all this it is clear that syphilitc immunity is essentially represented by a special state of the integuments and mucosæ rendering them more or less refactory to a new inoculation.

With Burnum, Gaucher, and others, I am convinced that syphilitic immunity is local before becoming general. It only is manifest at the onset in the area immediately around the chancre. This conception is derived from the following two data:

1. Reinoculation of the primary accident at a point near the primary erosion generally gives a negative result, while it is frequently positive when the inoculation is undertaken sufficiently early in a region distant from the chancre.

2. The Bordet-Wassermann reaction made with the serum from the chancre give a positive result from the very onset of its development, while a positive reaction from the blood only takes place much later.

In my opinion this second test has a very small demonstrative value, inasmuch as it is not at all certain that Wassermann's reaction is governed by a specific antibody, as is theoretically supposed. On the contrary, it would certainly seem that the seroreaction is directly provoked by the spirocheta and its toxins, hence it is not related to the organic defence of the subject. For that matter, this in no way infirms my point of view which is sufficiently demonstrated by reinoculation experiments and clinical data, namely, that immunity is local long before it becomes general.

This theory of regional immunity is, however, not admitted by everybody; it is for Gerbay, a very moot point and in respect of this he refers to Marcel Pinard's opinion, namely, if immunity "becomes established slowly, it seems to require the same time for regions remote from the chancre. Autoinoculations show this clearly. Possibly, in general, during the first eleven days only, they develop in an absolutely similar fashion when done on the abdomen or arm, in the case of a genital chancre." The latter affirmation simply confirms my point of view, which is that of Gaucher, namely, that the syphilitic virus follows the course of the lymphatics and thus immunizes the territory that it traverses. Nnw, the spirocheta, in the case of a genital chancre, certainly does not pass through the superficial abdominal lymphatics, therefore there is no reason why the abdomen should be more refractory than the arm to an autoinoculation done at the onset of the second incubation. On the contrary, this inoculation is invariably negative if it is done along the course of the local lymphatics.

Local immunity is consequently early in its development. As to genearl immunity, it develops later, but at what time?

Queyrat has shown that, as a rule, the chancre can only be inoculated during the first ten days of its existence, and it has been concluded that immunity is constituted from this date on. Now nothing seems to me more questionable. The date of the inoculation possesses no importance whatsoever. What should be known is just up to what time a previous inoculation still manifests itself by a lesion presenting the characters of a syphilitic chancre. Otherwise put, the incubation of the inoculation accident must be fully taken into account.

Two examples may, perhaps, better illustrate my thought. Let us admit that general immunity begins the thirty-fifth day of the chancre.

First example. On the eighth day an inoculation is made whose time of incubation is twenty-five days. This inoculation will become apparent on the thirty-third day, because at the time a general immunity is still absent.

Second example: On the fifteenth day an inoculation is made whose time of incubation is twenty-five days. This inoculation should be manifest on the fortieth day, but it remains negative because immunity has taken place five days previously.

Now, Sabaréanu has shown that when the inoculated accident manifests itself rather early, otherwise more than ten days before the roseola, it assumes the aspect of a chancre, and that on the contrary, if it develops later all that will develop is a papule—an aborted chancre or an accident or secondary kind. This difference can only be due to the presence or absence of general immunity.

Therefore I conclude from these facts that general immunity is hardly developed until ten days before the appearance of the secondary accidents. Although local immunity occurs very early, general immunity is, on the contrary, late in development.

The study of the pathology of primary syphilis not only presents a great scientific interest, but it can also lead to practical conclusions of the highest importance.

It is known that the seroreaction becomes positive from fifteen to twenty days after the appearance of the chancre, therefore from fifteen to twenty days before the advent of the septicemia and general phenomena of immunity. Hence it is impossible that it is dependent upon general organic immunization. It appears to be governed by the penetration into the blood stream of the toxins derived from the parasites still confined in the lymphatics, penetration which clearly is in advance of the septicemia itself. Wassermann's reaction is not governed by a phenomenon of immunity; its positivity depends simply on the presence of a sufficient quantity of the spirocheta toxins in the general circulation.

The study of other phases of syphilis only confirm this point of view. From these data a primordial fact is derived from the therapeutic standpoint, namely that the appearance of Wassermann's reaction does not constitute an important date in the primary evolution from the viewpoint of aborting syphilis, because it corresponds neither to the septicemia nor to general immunization.

I am perfectly well aware that this conclusion is in flagrant contradiction with the present day teachings in respect of abortive treatment. I do not underestimate the great difficulties to be met with in attacking an almost intangible dogma, which may be expressed as follows. Abortion of syphilis is easily realized so long as the seroreaction is negative; once this phase passed, it is both difficult and uncertain. In point of fact, the date of the appearance of the serologic positivity plays in the minds of most physicians, a very important part and so to speak, constitutes a kind of distinct barrier separating two distinct phases beyond which, the disease having become generalized is much less easily curable. I do not deny that sterilization of a syphilitic is all the more difficult the longer the lapse of time since the onset of the chancre, but I pretend that we are dealing with a regular progression corresponding with the progression of the parasites in the lymphatics and that there is no sudden jump at the time serological posi-

tivity arises. The numerous statistics destined to demonstrate the contrary, all of which are established after the same pattern, namely, with *a priori* idea of the importance of a positive Wassermann, simply prove that abortion of the disease is all the easier, the earlier it is attempted. This line of demarcation separating the prehumoral and serological phases is absolutely fictitious and corresponds to no major pathological phenomenon, hence it possesses only a relative value in practice and above all from the therapeutic standpoint. This is what we have attempted to show (2) basing our work on Prof. Oltramare's clinical material, and we have looked for this demonstration in the fact that no matter what way the second incubation may artificially be divided, that the line of demarcation be placed at the tenth, twentieth, or thirtieth days of the chancre; the first always shows a higher percentage of cures than the second. To make this demonstration more certain still, I have divided my cases into four successive categories, as follows:

1. Patients treated during the first ten days of the second incubation,—twenty-five, with four relapses, sixteen per cent. failures.
2. Patients treated beginning the tenth to the twentieth day,—fifty, with seventeen relapses, thirty-four per cent. failures.
3. Patients treated beginning the twentieth to the thirtieth day,—twenty-two, with ten relapses, fory-five and five tenths per cent. failures.
4. Patients treated beginning the thirtieth to the thirty-fifth day, ten,—with six relapses, sixty per cent. failures.

The percentage of failures, that is to say, of abortive treatment, clearly progresses the more remote is the date of the chancre, and this progression is so regular that were the figures put on a chart, they would give a straight ascending line.

Consequently, the appearance of a positive Wassermann does not represent an important phase in the primary evolution from the viewpoint of therapeutics.

CONCLUSIONS

From the first and during the entire second incubation, some spirochetæ enter the general circulation, but so few in number that it has no practical importance.

The true septicemia occurs ten to fifteen days before the onset of the secondary phenomena; it is governed by the pouring into the subclavian vein of a great mass of parasites coming from the thoracic duct. It is only after having traveled through the entire lymphatic system that the spirocheta reaches the general circulation. If local immunity occurs early, general immunity, on the contrary, is late; it hardly becomes apparent before ten days previous to the roseola.

The appearance of seriological positivity does not represent an important phase in the primary evolution either from the viewpoints of pathology or therapeutics; in point of fact it does not correspond with either the socalled major septicemia or general organic immunity.

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Dactylitis Syphilitica

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The clinical picture of dactylitis syphilitica, or spina ventosa luetica, is quite striking, and therefore is often represented in textbooks. It is a spindle shaped swelling with, usually, the thickest part of the spindle in the middle of the length of the finger or the toe. Characteristic as it may be, however, the following case illustrates some of the difficulties which may surround the making of a definite diagnosis.

Case.—On June 4, 1925, a woman forty years of age came into the office with the right third toe swollen to this peculiar shape. The history, however, did not quite accord with the first impression. She said that she had been using a corn medicine over the first phalangeal joint, and that on cutting the corn she made a wound. After this the member became red and swollen. On closer examination a sinus was seen leading straight down to the joint, and up through it there oozed a glairy pus. This joint and the first phalanx, as well as the soft parts, seemed all to be swollen. The skin was deeply reddened, and the question naturally arose, had possibly an infective process, beginning in the wounded corn, spread deeply into the joint and along the periosteum? Streptodermias, which are so superficial and fleeting about the face and head, are often both tenacious and deeply penetrating on the feet and legs, in which the circulation is more sluggish. And it was here noted that she had dusky feet, although the pulse in both post tibials was distinct.

As for her social history she had been married in 1909 to a man of dissolute habits, from whom she was now divorced, and who seems to have suffered, at any rate, from gonorrhea. She never became pregnant.

There was another feature of the case which also did not seem to accord with our first impression which, it will be recalled, was that we were dealing with a luetic affection. From early girlhood the right foot had been sensitive to injuries. For instance, as a child she remembered that in breaking in new shoes the right foot was likely to suffer pain. At

dances, too, it would pain severely if accidentally struck, and her husband used to remark that it was strange that she should complain when nothing could be seen. In 1918, when thirty-three years of age, the fifth right toe swelled and became reddened, and burst and discharged pus. One day in August, 1919, her medical attendant found that it contained no bone, and he clipped off the dangling piece of flesh.

Fig. 1.—The noteworthy points are—the loss of the fifth toe, the deformity of the fourth and the spindle shaped swelling surmounted by a corn of the third. With a lens the slitlike opening can be seen in the centre of the corn.

In the following spring the right fourth toe underwent the same kind of inflammatory process, and this time the bone was scraped, and she received injections into the blood. Prompt healing took place, which was yet firm with retention of the bones of the toe, although, as will be seen later, the first phalanx was permanently affected. We could not ascertain if at that time her treatment had been antiluetic. In fact, she did not give us the slightest hint that she suspected her trouble to be luetic. The long years of sensitiveness of the foot and the slow, and seemingly inevitable, sequence of the affection of the toes from without inwards gave rise to the suspicion of a progressive trophic neural trouble. The skiagraph also showed atrophy of the distal end of the fifth metatarsal, and of the middle and proximal phalanges of the fourth toe just such as might take place in leprosy, syringomyelia or tabes, or in an injury to the vertebral column pressing on the nerves. There was no dissociation of sensations, however, and the knee jerks were present on both sides. Nor were there any other symptoms present, which could be ascribed to the nerves or to leprosy..

There was still another interesting feature. On examining the skiagraph with a pocket lens three small caritic lesions were found in the midst of the dactylitis. Two of these were of the distal extremity of the first phalanx, and one of the proximal extremity of the second phalanx of the third toe. These showed the disease to be focal and not merely atrophic, and therefore corresponded with the diagnosis of a focal as contrasted with an atrophic disease. This was, strictly speaking, the only direct evidence that the skiagraph presented, but it was definite.

The patient's Wassermann was negative. A therapeutic test was determined upon, and she was put on a mixture containing bichloride of mercury and iodide of potash, and she was directed to rub mercurial ointment into the foot. The improvement noted at her next visit was that usually seen in syphilis, and now as usual we inquired about her gums. She said that her gums were all right, but incidentally remarked that a trouble in the roof of her mouth had also improved. On looking at this what was our astonishment to see a typical gummatous ulcer in the median line at the junction of the hard and soft palate. It was oval, punched out, with a bright yellow floor, and was situated in a scarlet field. As further evidence there was a circular depressed scar to the right of this, but the patient had no recollection at all of the ulcer which had caused it. There was also marked thickening of the mucous membrane on the left side of the septum nasi, with a large ulcer, and perforation. The presence of the lesions in the mouth and naris coincident with the dactylitis showing three widely separated active lesions richly bathed in blood, and the absence of a positive Wassermann reaction was most interesting. One would naturally think that three such active lesions, so widely separated, would inevitably cause an easily detectable seral change.

The patient at first did not complain of any trouble in either the mouth or nose, and it was only on the second or third visit that we examined the mouth, and then as a matter of routine the nose. It is a well known clinical fact that the lesions in the nose are painless, and are regarded by the patient as symptoms of a common cold until suddenly one fine day blood and pieces of bone are blown out into the handkerchief. It is indeed fortunate then if the bridge of the nose does not sink, giving rise to a conspicuous and characteristic deformity.

In the first examination of a patient we almost never fail to look in the mouth, and no doubt it was a technical error not to have done so in this case. If, however, we had found this absolutely conclusive symptom in the first instance, we might have neglected making either a blood test or a skiagraph, and the case would have lost two of its most interesting

Fig. 2.—The atrophy of the distal end of the fifth metatarsal bone, and the thinning of the shaft of the first phalanx, and the distortion of the second and third phalanges of the fourth toe are evident. Unfortunately the caritic erosions, distinct in the skiagraph, show only dimly in the cut.
Radiograph by Ruggles and Bryan, San Francisco.

features, for both the negative Wassermann and the skiograph, which showed on gross examination only atrophy of the bones, might easily have lead to an erroneous diagnosis. It will be remembered that the definite luetic symptoms in this situation were only discernible with a lens.

Still another point in the history was cleared up on ascertaining the true nature of the disease.

It will be remembered that the patient ascribed the inflammation of the toe to infection acquired from cutting a corn. The corn undoubtedly was present, but the reason for it especially troubling her was likely the swelling of the toe from the lues, which also made the corn more easily vulnerable, by bulging up the vascular tissues. The swelling of the toe, therefore, in all probability antedated the supposed opportunity for infection.

There was very little tenderness of the toe, and it could be handled with impunity, nor was there any history of characteristic osteocopic pains. She had a sensation of heaviness in the whole foot, and at intervals she would have sharp lancinating pains shooting up the entire limb, so severe as to awaken her out of a deep sleep, which might readily have been mistaken for the fulgurating pains of tabes.

The discharge from the sinus ceased almost coincidentally with the termination of a ten weeks' course of arsphenamine and grey oil.

Dactylitis syphilitica is a rare affection, and curiously enough, much rarer on the toes than on the fingers. Lacapère, who has had a large experience in syphilis of the bones in Morocco, where the natives are especially prone to this form of the disease, only reports one case, and that one of the great toe. It appears that in Morocco, in late syphilis, lesions of the bones come in frequency immediately after lesions of the skin and mucous membranes, so that Lacapère found in 2,072 patients 495 instances of bone syphilis, and, as before mentioned, there was only one case in which the bones of the toe were affected, whereas the phalanges of the fingers were affected in sixteen instances (1). It must be rare indeed to find a number of toes affected as in this case, for it must be assumed that the previous trouble in the fourth and fifth toes was also syphilitic. We can only ascribe this susceptibility to spirochetal attack to some tissue weakness, of which possibly the tenderness of the foot to traumatism throughout the patient's life may also have been an expression.

The patient, however, seems to have had susceptibility of the general osseous system, for besides the affection of the toes she had a perforation of the septum nasi and the lesion in the palate would undoubtedly have gone on to osteitis of the palate bone if it had not been checked by treatment.

Syphilis of the phalanges usually seems to begin in the cartilage of the joint or in the periosteum, as it appeared to do in this case, and then to spread to the bone, where in this case it had already caused superficial caritic erosions. It would appear that it is only when the Haversian canals are deeply affected that characteristic osteocopic pains supervene.

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Neurosyphilis, Its Diagnosis and Treatment by the General Practitioner*

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While in a general way acquired syphilitic infection is primarily a matter of individual and community responsibility, neurosyphilis is to a great extent a purely medical problem, the solution of which lies for the most part not in the hands of the syphilogist or neuropsychiatrist, but rather in the hands of the physician practicing general medicine.

There is no question but that acquired syphilis affects the central nervous system by specific lesions in a considerable proportion of all luetic cases and this is not surprising when we consider that like the skin, which has been regarded as the favorite field of invasion, the nervous system is of ectodermal origin, and in fact the frequent symptoms of nerve root involvement in early syphilis and their relation to the usual location of primary and secondary lesions have been considered by some investigators as suggestive that the cerebrospinal involvement may be by a lymphogenous route from the skin along the sheaths of the spinal nerves. For many years it was generally understood that but one to two per cent. of syphilitic patients became cases of neurosyphilis, but careful and systematic observations over the past ten years would seem to show in at least twenty-five per cent. of all patients there develop cerebrospinal lesions; that one half of all patients during the secondary period show some involvement of the optic and auditory nerves which may be transitory or permanent; and that from seventy to eighty-two per cent. of patients with early syphilitic lesions show spinal fluid changes, while state hospital records show that one out of every six patients admitted as insane owe their mental disease to syphilitic involvement of the central nervous system.

Another erroneous conception in connection with neurosyphilis has been that of the period of incubation, or the time elapsing between the appearance of the initial lesion and the involvement of the structures of the brain and spinal cord. Formerly we were taught to regard syphilis of the nervous system as a late manifestation, appearing anywhere from ten to twenty years after infection. This has been misleading and undoubtedly productive of much harm and has caused many cases to be overlooked and conveyed to both physician and patient a sense of false security that has resulted disastrously. The fact is that there is no period of exemption after infection, and while cases of neurosyphilis may be encountered, twenty, thirty and even forty years after the initial lesion and while many syphilitic individuals may die from other causes and thereby escape luetic brain and cord accidents, on the other hand the prodromata of neurosyphilis may occur at any date after the first few months and the first year shows the greatest

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number of cases and these patients are frequently treated as neurasthenics until irreparable damage has been done and the period which offered a fair chance of effecting a cure has passed.

We have under observation at the present time a patient on furlough from the Danville State Hospital who is being treated for cerebral syphilis. This man was one of five who were infected by the same woman on the same night and all but he have died from neurosyphilis within five years.

CLASSIFICATION

From the pathological standpoint, syphilitic nerve lesions may be grouped under two broad classifications:

1. Meningovascular lesions which, like specific lesions elsewhere, originate in the connective tissue or bloodvessels and only secondarily affect the parenchyma. These lesions manifest themselves early in a disturbance of function and not until much later as a result of neglect or failure of treatment do they destroy the essential cells and fibres of the part.

2. Parasyphilitic lesions, which affect generally the cortical parenchyma, are always degenerative in character, and are marked by glial increase and Wallerian degenerations and failure to respond but temporarily to specific therapy.

Either of these lesions may involve primarily and remain confined to either the brain or spinal cord or both of these structures may be invaded at some period of the disease.

Clinically the meningovascular lesions manifest themselves as cerebrospinal syphilis which is further divided for descriptive study into cerebral syphilis and spinal syphilis according to the predominance of distinct cerebral or spinal symptoms, for while most cases of spinal syphilis show evidences of more or less brain involvement at some period, the cerebral type is frequently devoid of spinal complications.

Parasyphilitic lesions are generally manifested as paresis or tabes dorsalis either of which may be acquired or hereditary.

CEREBRAL SYPHILIS—SYMPTOMATOLOGY

While the general symptoms of well developed cerebral syphilis show certain modifications as the result of the particular type of lesion that may be present, there are in all types as a rule a prodromal period that is of the utmost importance to recognize and during which the patient is seeking relief at the hands of his family physician.

These early manifestations are headache, dizziness, disturbances of sleep, irritability, inability to apply one's self continuously to one's work, lack of interest in work, a failure of general physical health. In other words the patient presents the generally accepted symptoms of neurasthenia.

The neuropsychiatrist frequently sees such patients who as Dr. Jelliffe has so aptly remarked, "have had their teeth pulled, their tonsils gouged out, their eye glasses refitted or eye muscles cut, their cervices amputated, their ovaries removed, from nine inches to six feet of gut cut out, all of the endocrine glands dispensed, weeks of colonic irrigation with or without electrical rigmaroles. These patients often go through every fad and fiction of medicine before a competent examination reveals the underlying factor."

If we examine carefully into the above symptoms of the supposed neurasthenic we find that the headache is of a very disagreeable character, varying in intensity from a dull, boring pain to one that is atrocious in its severity. It is inconstant, intermittent, frequently worse at night than in the day time. Beginning often in a localized area, which is marked by tenderness on percussion, it may gradually invade the entire head and frequently defying all sedatives save morphine, last for months and yet yield in a few days to mercury and the iodides.

Vertigo in shorter or longer attacks is frequently associated with the headache and is always increased by mental or physical work. In some cases it is the only single symptom that manifests itself during the prodromal period, and therefore continued dizziness in a young or middle aged adult should always arouse the suspicion of brain syphilis.

Sleep may be modified in two ways. There is either insomnia or abnormal sleepiness. The insomnia often occurs early before the beginning of headaches and is of course increased as a result of the pain as this appears. Abnormal sleepiness is also of great significance. This condition may occur early. The patient will frequently drop to sleep at any time during the day over his desk or his paper or even at his meals and even when aroused at night by the cephalalgia he will frequently drop back into a heavy stuporous sleep.

With the above distressing manifestations we find as a logical accompaniment mental and physical changes. The patient becomes dull, more or less apathetic, disinclined for study, work or social enjoyment, the memory is frequently impaired as the result of lack of concentration and fixation of ideas, he looks and acts and feels depressed or indifferent. The appetite is lost, strength declines, he loses weight and the skin and mucous membranes grow pale and anemic.

Often at this period definite neurological signs are present and the alert physician will frequently find in a drooping eyelid, unequal pupils or tingling, twitching or fine tremors in an arm or leg or about the muscles of the mouth objective evidences that will label the condition almost conclusively.

If the disease progresses beyond the prodromal period, its further development is marked by evidences of meningitis, arteritis, or gummatous formation. At this time the neurological signs are prominent. Pupillary inequalities or sluggishness in reaction to light or accommodation are present, ptosis and squints are frequent and diplopia is sometimes complained of as the result of cranial nerve involvement, monoplegias or hemiplegias and aphasias make their appearance and these may be transitory and partial or complete and permanent. Epileptiform convulsions develop which may be of a petit mal, grand mal, or Jacksonian type and during this period the patient may at any time exhibit all the symptoms of an acute meningitis or death may result from rupture of a large basal vessel or thrombosis in the circle of Willis.

MENINGOVASCULAR SPINAL SYPHILIS—SYMPTOMATOLOGY

In considering meningovascular syphilitic lesions of the spinal cord, we should bear in mind the fact

that practically all cases sooner or later present evidences of cerebral involvement and in fact a diagnosis of syphilis of the cord often depends upon this association. In primary syphilis of the spinal cord and its membranes, the disease is at first limited to the meninges, nerve roots and bloodvessels, just as are the lesions of cerebral syphilis; changes in the cord itself being always secondary and in a sense mechanical.

Clinically, meningovascular spinal syphilis presents the symptoms of a spinal meningitis or meningomyelitis. These symptoms are principally pain and palsies. The pains are early manifestations and like those of cerebral syphilis are often intense and show a tendency to noctural exacerbation. They are as a rule located in the lower extremities and are generally associated with an almost intolerable rachialgia in the lower part of the back. These pains are due to nerve root involvement and may be marked by tenderness along the nerve trunks and by herpes and glossy skin. Sensory disturbances are likewise present and consist of formication, numbness and coldness of the parts affected. Palsies as a rule in the early stages are rarely complete and confined generally to the lower extremities with partial loss of function and general heaviness and clumsiness upon attempts to walk. Later as a result of either extension or pressure from chronic meningeal thickening, the reflex excitability of the cord will be increased and will show itself by increased patellar reflexes, at times a positive Babinski, Oppenheim or Chaddock signs and a spastic paralysis below the hips. As the cord itself becomes involved there will be developed myelitic syndromes with some loss of sensation and vesical and rectal incontinence.

PARASYPHILITIC LESIONS

In the second group of neurosyphilitic conditions, namely the parasyphilitic type, we are dealing with a condition in which the parenchyma of the central nervous system has been invaded by the treponema with a resultant degeneration of the essential constituents of the brain and cord, and in consequence we may have a varied clinical picture dependent upon the preponderance of involvement of various tracts and centres. Thus if the anterior spinal horns are affected we may have the clinical picture of a progressive muscular atrophy with its characteristic paralysis and wasting. If the lateral tracts are involved the evidence of a spastic peraplegia will be most prominent with the characteristic spastic gait, loss of function and increased patellar reflexes. If the posterior columns are involved, we have the tabetic syndrome and if the brain cortex is invaded there may be epileptiform attacks and the mental and neurological picture of paresis.

TABES DORSALIS—SYMPTOMATOLOGY

Tabes dorsalis or locomotor ataxia may develop in from a few months to fifty years after the initial lesion and may show its characteristic symptoms at any period between fifteen and seventy years of age. The great majority of cases, however, occur between the ages of thirty and forty-five years and from five to fifteen years after infection.

While in this disease the clinical picture may be more or less varied and while there is no one symptom that may not be absent in a given case and very few neurological signs that may not be present in other neurological conditions the following syndrome may be relied upon for practical purposes:

1. *Pain.*—This may be of a sharp neuralgic character generally appearing in the lower extremities and often preceding all other symptoms, there may also be crises affecting various viscera, the most common being the gastric crises consisting of sudden violent gastric pain, radiating in all directions and in severe attacks accompanied by nausea, vomiting and great prostration. These pains may last for a few hours or a few days and then disappear for weeks or months to recur at irregular intervals. Some cases of tabes begin with such crises and failure to recognize their nature has led to unjustified laparotomy.

2. *Parasthesias and related sensory disturbances.*—These consist of tingling, numbness, crawling sensations, flashes of hot and cold, some impairment of tactile sensibility which causes the sensation in the upper extremity of wearing a glove and in the lower of walking on a carpet of velvet, and in some cases the superficial pain sense is lost and the patient cannot recognize the prick of a pin or appreciate the difference between hot and cold.

3. *Ataxia.*—This is one of the most prominent signs of sensory involvement and occurs as a result of degeneration of the fibres conducting the impulses from the joints and muscles to the chief organ for their coordination, the cerebellum, and as a result there is an imperfect knowledge of the position of the joints and of the states of muscular tension necessary to the performance of motor functions. Hence if the patient closes his eyes and abducts his arms to a right angle with the trunk he is unable to find his nose with his index finger or approximate the index fingers of both hands save with great difficulty. Likewise he is unable to find one knee with the other heel, if his legs are moved in bed cannot tell in what position they are placed and if the fingers or toes are moved is unable to tell their position. The gait also becomes altered and these changes are very characteristic. The patient first complains of difficulty in going up and down stairs, or finds himself insecure on uneven surfaces. At night he is unable to get about save with some difficulty and soon finds that in the daytime he must keep his eyes either on his legs or the surface on which he is walking in order to coordinate his movements. Later he finds it necessary to walk with a cane and he can always be heard before he is seen as a result of the sound caused by bringing the heel first to the ground and then the balance of the foot with a pronounced stamp.

Romberg's sign is practically always present at some stage of the disease and the patient is unable when standing with heels and toes together and eyes closed to maintain his equilibrium without swaying.

4. *Alteration of tendon reflexes.*—The patellar and achilles reflexes are diminished early in the disease and finally as a rule abolished. This alteration may begin in one side and so remain for a greater or less period of time but gradually the reflex excitability is entirely lost in both lower extremities.

5. *Changes in pupillary reflexes.*—One of the early signs and frequently the first to make its appearance is the Argyll-Robertson phenomenon, which consists

of a failure of the pupils to contract when exposed to direct light stimulation, while continuing to respond normally to accommodation.

6. *Visceral disturbances.*—The bladder is involved as a rule at some period in the disease and the usual manifestations are incontinence and cystitis. In some cases there may also be loss of control of the anal sphincter with resultant fecal incontinence.

Gradually and over a period of years, as a rule ten or fifteen, the physical strength fails, the patient becomes bedridden and death occurs either as the result of intercurrent disease or from complicating bulbar, cardiac or renal conditions.

PARESIS—SYMPTOMATOLOGY

General paresis is an organic disease of the brain of an inflammatory and degenerative nature, involving in the main the leptomeninges and cortex, and manifesting itself by certain physical and neurological signs and a progressive mental deterioration on which may be engrafted various other symptoms of mental disturbance.

Among the early symptoms of this disease are a gradual change of character, with a slight but progressive failing of mental capacity. The patient is unable to apply himself to his work. Mental application of any kind brings on fatigue. Slight memory defects are apparent. Business engagements are forgotten and errors of judgment become quite marked. The patient will enter into all sorts of financial relations with various people, risk his savings on hair-brained schemes. There is often alteration in his morale, and he may use alcohol to excess or become the companion of prostitutes, and see nothing out of the way in his conduct. He becomes careless about his personal appearance, wears soiled linen, forgets his collar or tie, and engrafted on these signs of beginning deterioration may be symptoms of emotional excitement or depression and delusions of a hypochondriacal or grandiose nature, together with hallucinations and illusions.

Neurologically there is exaggeration or diminution of the patellar reflex of one or both sides. The pupils, while reacting to accommodation, are frequently sluggish in their reaction to light and they may show inequality and irregularity in outline. A very slight defect of speech may be noticeable when test phrases are employed, and there may be a slight tremor about the muscles of the mouth during emotional excitement or in attempting to say a difficult word.

Cases of paresis, as a rule, when they reach state hospitals, are beyond the hope of cure, although much may be hoped for if the disease is recognized early, and in making a diagnosis two things should always be borne in mind:

1. That as a gross organic, metasyphilis disease of the brain, the mental symptoms alone must not be taken as a guide. The neurological signs, particularly those in the field of motor disturbance, should always be sought for.

2. The expansive delusions of great wealth, power, and strength, so often described as classical symptoms of the disease, do not necessarily form a part of it, and we may have instead of these, in addition to the general beginning, mental deterioration, a delusional system and emotional conditions similar to the other psychoses.

DIFFERENTIAL DIAGNOSIS

Paresis may be differentiated from locomotor ataxia, if we bear in mind that in the latter we are dealing with a sclerosis of the posterior columns of the cord and hence we have present early, shooting pains in the legs, sense of constriction about the body and visceral crises, together with a progressive optic atrophy. There is an absence of the tremor, speech defect, and mental deterioration.

Cerebral syphilis of the diffuse meningitic type presents headache, dizziness, somnolence, localized paralysis, especially of the cranial nerves below the third, and often a spastic and partly paralytic condition of the lower extremities with increased knee jerks and a positive Babinski sign are present. In the endarteritic type, the clinical manifestations are essentially those of the cerebral arteriosclerosis. In all forms of cerebral syphilis, the mental manifestations are less prominent than in paresis, and the personality is much better preserved, as is shown by the social reactions, ethical sense, judgment and general behavior; while delusions and hallucinations are seldom encountered.

HEREDITARY NEUROSYPHILIS

In the above discussion we have been dealing with conditions produced by acquired syphilitic infection. Hereditary syphilis is likewise capable of producing any or all of the conditions that follow the acquired infection and hence we meet not uncommonly with juvenile tabes and paresis. In addition we may likewise have various degrees of mental defect or of psychopathic personality. Any of these conditions may appear in the early years of life or be postponed until puberty or even until the twentieth or thirtieth year.

AIDS IN EARLY DIAGNOSIS

In view of the large number of individuals who develop neurosyphilis, the insidious manner of its onset and the varied clinical signs which it presents, in what way may we best proceed in the matter of its early recognition?

1. Bearing in mind that from five to ten per cent. of the population of this country are syphilitic, we should consider the possibility of its existence in every patient who seeks our advice and the absence of a history of primary infection should not be regarded as conclusive evidence that the disease is not present for infection may occur without the development of any appreciable lesion and furthermore the majority of neurosyphilitic patients do not show secondary lesions.

2. It should be remembered that as a rule prodromal manifestations are present over a period of months and sometimes years and the patient with a stubborn neuritis, or neurasthenia, obstinate headaches, periodic attacks of gastric or vesical pain will frequently show upon critical examination syphilis as the etiological factor.

3. Apoplectic stroke before the age of forty and epileptiform convulsions beginning after the age of twenty-five years are in the majority of instances due to syphilitic involvement of the central nervous system and farther the epileptic and choreic child should always be investigated neurologically and serologically as supposed epilepsy and chorea in childhood is often in reality juvenile paresis.

4. A neurological examination should be made in every case in which there is a history or suspicion of syphilitic infection. In every patient who applies for treatment for syphilis, the physician should acquaint himself with the pupillary reactions, the tendon reflexes, the coordination of gait, station and speech and the findings should be recorded to the end that at a later period they may serve as a definite check upon neurological findings.

5. Pregnancy and blood Wassermann should be synonymous terms. If the findings are positive, a second examination should be made as a check against possible error and if again positive results are had, specific therapy should employed with a view of preventing the disease in the child.

6. A Wassermann examination of the blood should be made of every patient applying for treatment, irrespective of what condition he consults the physician for, and in cases of syphilis this should be supplemented by a serological, chemical and cytological examination of the spinal fluid, and while these tests are not infallible and negative findings should not be considered conclusive evidence of freedom from infection in the presence of well developed neurological signs, on the other hand in the great majority of cases these tests will confirm the diagnosis and often a positive spinal fluid will give the earliest clue to involvement of the brain and spinal cord. This course is now being pursued in the majority of our general hospitals and group clinics throughout the country and is a procedure that the majority of patients appreciate.

The successful treatment of neurosyphilis is one hundred per cent. preventive, for a diagnosis of cord or brain syphilis implies the recognition of a critical condition. If, however, the central nervous system has become involved and the patient is seen in the early stages of the condition, much may be expected from intensive treatment. This is especially true of the meningovascular type. Here the lesions are inflammatory and exudative and hence we may expect to secure a substantial control and often a practical cure. When, however, the organisms have invaded the parenchyma of the brain and cord and escaped from the fibrovascular structures, our present remedies seem incapable of reaching them in sufficient quantity to work their destruction, although even in these cases early treatment may result in prolonging the economic efficiency and life of the patient and at times produce remissions for indefinite periods of time. The therapeutic agents and procedures advocated in the treatment of neurosyphilis are as varied as the hues of the rainbow. These include the arsenical preparations, various bismuth salts and compounds and most recently the injection of the plasmodium malariæ, and the methods of introduction into the body have consisted of intraspinous, intraventricular, intramuscular and intravenous injections, all of which have been supplementary to the tried and proven stand bys, mercury and the iodides in varying forms.

A discussion of the relative value of these agents and the various methods of their administration would involve a lengthy presentation of many varied and opposing observations. On the whole it may be asserted that for practical purposes arsenic in the form of arsphenamine or neoarsphenamine used in conjunction with mercury and the iodides has given the most satisfactory results. The best methods of introducing these antisyphilitic remedies into the body are probably the intravenous injection of from 0.6 to 0.9 grm. of arsphenamine once weekly for a period of from six to eight weeks, this to be followed by mercurial inunctions and potassium iodide by mouth for a like period, being guided by the regular precautions in the use of these latter remedies. This alternating treatment should be carried on over an indefinite period, the length of time being determined by the clinical signs and blood and spinal fluid evidences of improvement. It should be borne in mind that a patient who has once shown evidences of syphilis can never be regarded as permanently cured and if his best interests are to be served he must submit himself to neurological and serological investigations at regular intervals throughout life.

In conclusion, I would again stress the fact that neurosyphilis and its treatment resolves itself into a conscientious and scientific study of every patient that presents himself to the general practitioner for advice and a determination of the presence or absence of syphilis in every case before a definite course of treatment is outlined.

Tryparsamide and Paresis.—Sidney I. Schwab (*Medical Clinics of North America,* July, 1925) says that obviously no definite conclusions as to the therapeutic efficacy of tryparsamide can be made at the present time, but as a result of his experiences in five cases of paresis certain tentative ideas are worth noting. Tryparsamide is a drug that must be used with care and careful selection of cases. In paresis a study of the type of case and its progress should be made before the drug is given. In extremely advanced cases in which mental deterioration is excessive and where the cerebral tissue degeneration is very evident, as measured by symptoms and findings, nothing can be expected. Optic nerve changes are to be regarded as contraindications for tryparsamide treatment unless the case would seem to promise favorable reaction to the drug. In the presence of optic nerve changes in which mental deterioration is not far advanced and in which conduct and behavior are not primarily affected—to such an extent at any rate that adaptation may not be hoped for—tryparsamide may be given in small doses and in lengthened intervals. Tryparsamide in association with arsphenamin and mercury offers in selected cases and selected types of paresis the most promising method of treatment that is at present available. The remarkable changes for the better in conduct and in general physical wellbeing are evidences of the fact that this drug does exercise a definite influence upon the cellular defensive mechanism. In this particular feature it is almost a unique contribution to the pharmacology of syphilitic disease of the nervous system.

An attempt has been made in the clinical cases presented to suggest that paresis is largely a matter of abnormal conduct and behavior and that the final diagnostic test should be based upon a study of these abnormal reactions rather than upon any rigid interpretation of the findings in the spinal fluid and blood. In this way a clinical estimation of paresis can be built up which has for its purpose the study of the total personality of the patient rather than incidental findings and unimportant symptomatic features.

clearly indicated. Would the duodenal tube favor the patient and attending doctors by going through the various passages, narrow and wide? In view of the patient's extreme inanition and beginning hunger delirium, the mildest procedure must be tried. A cutting operation, even under local anesthesia, seemed clearly contraindicated, except it should become imperative.

Dr. Einhorn introduced a long duodenal tube with a special tip of smaller size, which soon passed the midgastric stricture and evidently entered the small intestine, inasmuch as clear bile was withdrawn after forty-eight hours, proving that it was in the jejunum. From the moment that the cardiac pouch had been put out of commission and at rest, vomiting ceased as by magic. Proper scientific feeding was begun at once, most carefully and at regular intervals and was well borne. The patient felt relieved from her fear and despair. The battle was won. A few days later she was out of bed.

After some discussion the patient was persuaded to allow the tube to remain in place for fully three weeks. When removed on June 21st, vomiting did not return. To keep the patient at the hospital and slowly prepare her for the second contemplated operative step was out of question. She insisted on going home as soon as possible, and was discharged on June 26th. She promised to call at the office for observation.

When seen at the office on December 2d she had gained fifteen pounds in weight (weighing ninety-nine pounds). A casual hint at a second operation was flatly rejected. She was completely satisfied with her present condition.

She was not seen after June 25th. On inquiry she was reported, under date of April 30, 1925, to be eating comparatively little in order to avoid distress; felt very well; weighed ninety-six pounds.

Surely, the duodenal tube here acted as a life saver in the nick of time and will likely do so again under similar circumstances.

A recent observation of a more subacutely occurring vicious circle, subsequent to a posterior gastroenterostomy, which was successfully overcome by the duodenal tube, may be here cited as a further example of the value of jejunal feeding by means of a long duodenal tube in the presence of persistent vomiting during the days immediately following the operation.

Case II.—A male, sixty years old, had shown signs of benign pyloric stenosis for more than twelve years; conservative treatment at the hands of Dr. Einhorn kept him going. Now operation was indicated. On February 26, 1925, typical posterior gastrojejunal anastomosis with a short loop was carried out by me. Operation was well borne; there was no reaction whatever. Beginning on the fifth day, with increasing quantity of nourishing food administered by mouth, vomiting of large masses containing a great amount of bile, occurred once or twice a day. Gastric lavage with colonic irrigation and proper feeding kept it in check to some extent. Still, the patient was slowly losing ground. A long duodenal tube was passed by Dr. Einhorn. It slipped nicely into the intestine, so that regular jejunal feeding and the instillation of quarts of Ringer's solution could be taken up. Patient recuperated quickly. When the tube was withdrawn at the end of the third week, normal, continuously downward current of food had been established. Soon the patient went home. According to recent information he is in splendid condition, has gained more than fifteen pounds in four weeks and enjoys life.

Observations like these are to my mind of great importance to the surgeon. In the course of his work he will now and then come across a patient who develops the socalled vicious circle after gastroenterostomy, although the operative technic was the same in every detail as in a score of other similar operations in which there was no vomiting: short loop, wide anastomosis, borders of rent in transverse mesocolon stitched to stomach instead of jejunum, etc. The cause of such persistent vomiting cannot be explained except on individual lines: the unavoidable entrance of some bile into the stomach, acting as an emetic in this particular case, although usually it is seen to become a not unwelcome guest of the stomach after gastroenterostomy and likely, on account of its alkalinity, plays an important rôle in many cases of duodenal ulcer in hastening the final healing of the ulceration and avoiding the formation of a marginal ulcer.

No doubt a mechanical cause for persistent vomiting during the first days after operation must also be thought of, e. g., a slight kink at the distal corner of the anastomosis, a temporary postoperative acute edema of the sutured portion of the gastrojejunal wound, which may easily prevent liquid and soft food within the stomach from entering the distal portion of the jejunum, but rather forcing it into the afferent portion of the loop, viz., into the duodenum.

In other cases the persistent vomiting subsequent to gastroenterostomy must, I think, be due to a functional cause, the vagus and sympathetic nerve plexuses producing antiperistalsis. In the case of the sixty year old male patient, cited above, it struck me as rather remarkable in the first four days of postoperative treatment, that he had regularly retained every drop of a quart of the usual medicated rectal instillation, administered every eight hours. I am sure the typical observation of operators everywhere is that at least a part of these drips, given three times in twenty-four hours, is expelled on the third or fourth day after the operation. I feel that likely we had to deal with an antiperistaltic action of the lower bowel. Whether this be so and whether the antiperistalsis gradually ascended to the small intestine I am, of course, unable to prove, particularly as a slightly fecal odor of the vomited masses was noticed only later on, when the indication for the introduction of the duodenal tube was found.

It should be said here, that in June, 1917, Dr. Einhorn published a paper entitled The Importance of Duodenal Alimentation in Severe Dyspepsia Occurring After Gastroenterostomy in the *Medical Record*. His observations dealt with the beneficial effect of duodenal feeding in the presence of untoward symptoms occurring, or persisting for, weeks and months after establishment of the anastomosis. Eight out of ten patients treated made a complete recovery, not requiring any further surgical aid. Two others showed considerable improvement during this treatment, but as soon as the tube was removed and nourishment given in the usual way the pains returned. Both had to undergo a second surgical interference.

Here, then, the value of the duodenal tube became apparent in cases manifesting untoward postoperative symptoms of a more chronic type.

The clinical observations exhaustively described above refer to the days immediately following operation. They prove that the duodenal tube may act as a lifesaving instrument by rendering unnecessary the reentering of the abdomen in order to perform either an additional enteroenterostomy—often technically very difficult on account of the short afferent loop—or a jejunostomy.

In a weakened patient, with little power of resistance left, after days of postoperative vomiting, further operative intervention means a serious undertaking in his already precarious condition. If it can be avoided by employing a harmless, though perhaps to some patients somewhat unpleasant, interference, this certainly is the preferable procedure.

At all events, the duodenal tube tides the patient over the gravest time in acute and subacute postoperative vomiting, that does not yield to either gastric lavage nor colonic irrigation, the old socalled vicious circle, now surely rarely met with after gastroenterostomy. And the duodenal tube not only stops the vomiting, but permits regular alimentation and the instillation of quarts of fluid by the rapid drop method.

To my mind the duodenal tube after operations on the stomach deserves to be put to use much more frequently than seems to be the case at present.

A Pollen Filter

Preliminary Report of the Treatment of Hay Fever in Rooms Made Pollen Free by a New Filter

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In the treatment of pollen disease there are two available methods, one, the removal of the patient to a habitat where the specific pollen causing the disease does not exist in sufficient quantity to produce symptoms, and second, the production in the patient of tolerance to the specific pollen so that the quantity present in the air is insufficient to produce symptoms.

The first method is impractical for the majority of patients with pollen disease as contrary to the old adage that "Hay fever is a disease of the rich," it is present among people of all financial strata of society. Only the wealthy can afford to go away for a sufficiently long time or far enough to obtain relief, and many of these will not do so as those resorts where relief from hay fever is found are amidst primitive surroundings far from civilization. Weed pollens like the flag, follow closely the advance of civilization and progress. Hence because of financial or social reasons the second method has become the more commonly accepted one.

This method too has its limitations as it is not always possible to establish sufficient tolerance for complete or nearly complete relief from symptoms. Statistics published by a number of observers show that relief is obtained in from forty to eighty per cent. of cases and my own records substantiate these figures.

There is a large group of hay fever sufferers therefore who get little or no relief because of insufficient or unsuccessful treatment.

Last year I had as a patient an engineer whose specialty is dust collecting and conveying. He stated that he could build an apparatus which would be practical for use in the patient's home, which would produce and maintain a pollen free atmosphere in any ordinary room. Early in August, 1925, I received an experimental model of this machine. It was designed to filter out all of the pollen and dust in an incoming air stream and to bring so much pollen free air into the room each minute that a positive pressure of air would be produced and air would leave the room through all the cracks and openings instead of entering through them. The diagram illustrates the engineering principles of the apparatus.

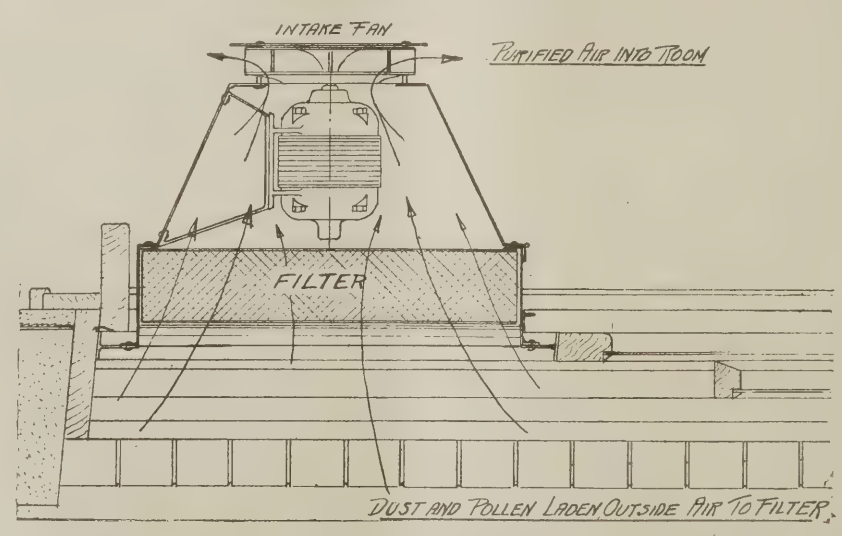

Fig. 1.—Diagram of filter

EXPERIMENTS

The following experiments were performed many times, the protocol illustrates a typical result.

EXPERIMENT I

Atmospheric pollen plates were distributed over the entire area of exit of filtered air. The motor was started and five hundred cubic feet of air per minute were passed through the machine. Then two hundred and fifty mgm. of ragweed pollen was thrown into the air intake of the machine and operation at this speed was continued for ten minutes. The plates were then removed and examined microscopically for the presence of pollen. No pollen was found on any plate.

This experiment demonstrated that the machine was capable of freeing air of ragweed pollen and that it would bring into a room five hundred cubic feet of pollen free air a minute.

EXPERIMENT II

The machine was placed in the window of a hospital room with a cubic capacity of fifteen hundred feet. The door into the corridor was closed and the machine was started. Within one minute a stream of air could be felt escaping from the room through the keyhole and under the door. This current of air had sufficient velocity to blow a cigarette paper several feet along the floor of the corridor. Since the volume of air entering the room (five hundred cubic feet of air a minute) was one third the cubic capacity of the room, the air in the room was completely changed every three minutes. Atmospheric pollen plates were exposed in this room for periods varying from several hours to three days. In no instance was a pollen found. Similar plates exposed in the corridor and in adjoining rooms contained many pollens. This experiment demonstrated that by means of this apparatus an ordinary room could be maintained pollen free when the atmospheric air contained many pollens.

Further experiments showed that this room could be maintained in a pollen free state when the volume of incoming air was reduced to three hundred cubic feet per minute and the air was completely changed every five minutes. During these experiments nurses and doctors entered the room through the door whenever necessary for the performance of their routine duties, the only precaution being that the door was opened and closed slowly.

When patients were placed in this room a number of interesting observations were made.

1. Patients with hay fever without asthma noticed some relief within a few minutes, and after from six to eight hours the nasal and ocular symptoms were completely relieved.

2. Patients with severe ragweed asthma required from two to five days before their acute paroxysms subsided. This observation was at first disconcerting as it was contrary to our expectations. However it was soon remembered that pollen could not be absorbed until acted upon by the ferments of the tissues with which it was in contact. There is very little known about the rate of decomposition of this pollen or the rate of absorption of its products. It is not improbable that it requires two to five days to absorb and neutralize the dose of pollen present in the respiratory mucous membrane when the patient is placed in the pollen free room.

These problems are being studied and further reports will be made from time to time.

SUMMARY AND CONCLUSIONS

An air filter has been devised which will completely remove pollen from the air.

By means of this filter it has been found practical to maintain rooms pollen free during the ragweed pollinating season and to study the speed with which patients become symptom free when removed from pollen laden atmosphere.

During the coming vernal and autumnal hay fever seasons the use of this machine in the prophylaxis of pollen allergy will be studied. Machines will be placed in patients' homes and offices so as to simulate as far as possible seasons of the year when there is no air borne pollen.

10616 Euclid Avenue.

A RARE MISHAP IN LITHOLAPAXY*

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A man, aged forty-five, complained of suprapubic pain on urination and a sudden stoppage of the urinary flow. A litholapaxy was done sixteen years ago. One year ago he suffered with typical renal colics, when roentgenography revealed three small calculi in the ureter, which were manipulated into the bladder. They are not known to have been passed spontaneously, nor was any attempt made to remove them.

Recently a cystogram showed an ovoid shaped stone about as large as a fair sized plum. Cystoscopically it appeared to be of phosphatic consistency. There was no other bladder abnormality visible.

As the patient absolutely refused a cystotomy, litholapaxy was advised and undertaken. During the procedure of stone crushing a metallic click was felt and heard and on removing the lithotrite, the male crushing jaw was found broken off at its junction with the shank. A Bigelow evacuator with a straight catheter attached was introduced and the broken fragment, measuring about three-quarters of an inch was aspirated.

This embarrassing mishap is an extremely rare occurrence, as evidenced by a review of the literature. The instrument was a product of one of the standard manufacturers, who claimed that the accident was the result of a faulty technic of manufacture.

Aneurysm Treated by Wiring.—G. H. Colt (*British Journal of Surgery*, July, 1925) reports three cases, one his own, which lead him to affirm that it is now clearly proved that the dull gilt wisp is sufficient to initiate active clotting in a saccular aneurysm even in an actively syphilic patient, and that it is unlikely to project through the opening of the sac. The wires do not become dissolved or broken, and appear to cause no trouble after many years. It would appear that the employment of electrolysis is not essential to start the clotting, and the experiments of Dawson Turner amply confirm this. If electrolysis is employed, he recommends zinc as the electrode. Macdonagh may be read in this connection. A simple way would be to coat alternate strands with zinc.

*Reported at a meeting of the Clinical Society of the Jewish Memorial Hospital, January 5, 1925.

Historical Medicine

Ancient and Modern Medical Heresies

(I) *Homeopathy and Christian Science*

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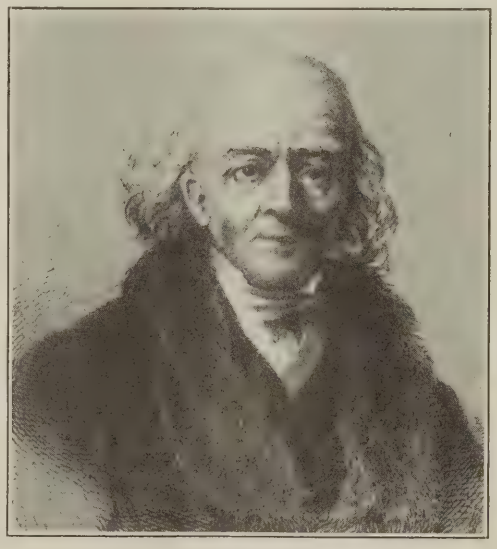
My interests have lately led me to a more careful reading of the text of Galen's remarks on the theories which interested Plato and Hippocrates, which fill more than six hundred pages of the text and translation of Kühn's edition (1a). It is a glaring deficiency in our literature of the history of medicine that there exists no translation into English of Galen's works, no good modern annotated edition of him at all. By far the most accessible and convenient and on the whole the least objectionable is the Kühn Latin translation, more or less closed to modern readers, with the accompanying Greek text. The Latin translation is often, how often I do not know, taken from older works. Whether Kühn's rendition or not, errors and inaccuracies and obscurities abound. The text is printed on abominable paper, but the Greek part though with miserable type is apparently freer from errors and inaccuracies and is far less obscure than the Latin translation. At least this is the impression of one in no way an impeccable critic himself.

Galen, though often long winded and sometimes on that account wearisome, is never dull and I have been amused in this treatise of his to observe the indications of how similar were the heresies assailing our profession in the days of Hippocrates, in those of Galen and in our own. In the recollection of men still living, who can look back fifty years or more, the three sects arising outside the pale of the profession which in that time have most exercised the imaginations of men, most taxed their patience and made the largest drafts upon their charity—drafts for the most part not honored we reluctantly admit —have been homeopathy which fifty years ago had reached its summit, the mind curists and the chiropractors, of more recent origin. During the early years, the middle years and the later one sect or other at one time or the other has aroused alike a sentiment in the breast of the regular practitioner for which only one name is descriptive—detestation. As time has rolled over each term of that epoch of a half century grudgingly, slowly, with halts and hesitation, the medical profession has opened its doors and allowed to slip in, if not the individuals much of the essence of the doctrine of infinitesimalists, of the Christian Scientists and lastly the rubbers are now knocking, if not at our doors, at the doors of the legislatures. The homeopaths have entered them and have lost their identity chiefly because we have all lost about as much faith in drugs in that time as we had in phlebotomy before it. Both drug therapy and phlebotomy may be said still to exist, but it is largely due to the homeopaths that drugging a l'outrance has practically disappeared and very much of the faith existing fifty years ago in any drugging at all.

I well remember as an interne in a hospital counting the prescriptions of one of the attending staff, a very acute diagnostician and by far the best educated man on the staff of a large metropolitan hospital. One patient was taking on one day eight prescriptions and a new one was pretty sure to be added the next day. Time and room for it in the patient was only secured by the house staff surreptitiously crossing off the oldest one. The faith curist and the mind curist have aroused the activities, inimical but receptive, of the psychiatrist, and the chiropractor and the massaseur have similarly influenced the physicotherapist in the regular profession—given birth to them one might almost say, but it is only the wise child among them who recognizes his father. For these are despised and maligned rivulets wandering in the waste of error, headed in the wrong direction, which have fed and mightily influenced the clinical practise of medicine in our day, without adding very much of value after all to the great onflowing stream of actual knowledge and the guiding theories by which the main current is directed. But they belong legitimately to the history of medicine. The high contagion theories have come off their perch, the fresh air fad is starting for the limbo of oblivion where has rested that of Athens for twenty-five hundred years and at which Aristophanes mocked at the time.



HAHNEMANN

EARLY HOMEOPATHY

As long ago as that the minds of men had flitting through them the infinitesimals of Democritus, if not infinitesimal doses. If they had no way of making doses infinitesimal they were well acquainted with the doctrine of similars, the *similia similibus curantur* of Hahnemann, for had not Empedocles declared the affinities of similars to similars as Alcmaeon, his master before him, had been busy with antagonists and the equilibrium of health between them? Even Hippocrates and Galen agree our bodies are made up

of earth and water and air and fire and that on account of the lack or excess of these or their misplacement diseases arise (1b). Now Nature is a great restorer. The *vis medicatrix naturae* is the sheet anchor of therapy yet, which we have heired from Hippocrates, whose therapy Asclepiades derided as the "contemplation of death." It has been the sheet anchor, however, of every sensible practitioner since. When there is a deficit of water Nature demands moisture, the feverish man demands drink. God forgive me for bathing all my typhoid patients in ice water but forgive still more generously my medical forefathers for snatching water from hands trembling with fever and thirst and hunger. When I was a student Dr. Alonzo Clark selected from medical history in 1880 his favorite joke. "Graves fed fevers." He went on to explain this was what Dr. Graves, the talented Irishman of the early part of the last century, wanted put on his tombstone. "The idea then was and still is now in your time, young gentlemen, that fever feeds graves, because we do not feed fevers." Alas, I have forgotten how Dr. Clark fed fevers, but I know we allowed the poor devils only to get a glass of milk every two or three hours for more than a score of years after that old joke first became known to us, not noticing Nature was begging for something more substantial.

DECLINE AND FALL

Well, when the trouble was with the moist element of the body in disease it was water you wanted to give or take away. *"Similia similibus curantur,"* the old dialectitians and diatitians had a great time as to just what they meant by that, whether it was a theory of deficiency or of a repletion of the element. They ended up with taking it away in fevers. Alcmaeon balanced deficiency against repletion and saw health in the centre, but nobody but a dyed in the wool dialectitian ever thought this meant anything. Like everything else in life with which man comes in contact there is a balance of good against the evil. It was Heraclitus taught that and at Ephesus he imbibed it doubtless from the same source as the Zoroastrians who made a religious theory out of it, a spirit of good in continual conflict with a spirit of evil—for a man's soul as the Christians and Dr. Faustus found out. Now it was Empedocles, who had been a pupil of Parmenides of Elea and who added the doctrine of similars to that realization of the old Nature Philosophers after Heraclitus which made this world a conflict between Ahriman and Ormuzd, between good and evil. It was Empedocles who first introduced into the physiology of man this idea of similars which had such a career until it disappeared in the materialistic and skeptical bosom of medicine.

METABOLIC DISEASES

I have just alluded to the natural doubt of the clinician in the case before him, after he has settled it that the trouble is with some element, water or the bile or the internal secretions—or God knows what is liable to appear as a factor in disease before this script is published—whether the patient is suffering from a repletion or a deficiency of water or bile or vitamine. Quite evidently the major argument for homeopathic doctrine gets in a blind alley here. If a man has dropsy, too much water, the ancient doctor could hardly expect to cure him by giving him more water or increasing his bile when he was bilious. The *similia similibus curantur* must be worked by getting rid of the water or the bile. Well in ancient medicine as in modern there was a factor in disease which might be ascribed sometimes to repletion and on the other hand a deficiency undoubtedly lies at the bottom of other maladies. Medicine came to Greece largely from Egypt, the land of plenty—for the rich—and it was food, too much of it, caused the trouble and a man should be purged regularly once in so often any how, whether he had anything the matter with him or not. But in the sterile land of Greece torn by wars and famines, this notion met with an opponent. Under the scourge of the European wars in Hahnemann's day and in ours the mortality of deficiency diseases arises. Starvation has a number of poor kindred—"poor blood," consumption, rickets, reduced resistance to infection. Whether food or drugs the system craves addition to its forces, "Give me more fat, more blood, the earthy in my bones cries for more iron." *"Similia similibus curantur"* has a career in this crude train of thought and we may be sure it was not absent from the teeming brain of the ancient Greek. The Egyptian liver had its plutocratic trouble, as did that of the English nabob in India and the Nile doctors pointed it out, but Empedocles and his friends along the north shore of the Mediterranean had other tales to tell.

HIPPOCRATES

Hippocrates knew what he was talking about when he wrote his *Airs, Waters and Places.* He knew well how much these influenced the diseases as well as the character of men. Their influence upon the history of thought has not had the consideration it has had in the history of man's social and political life and it has had little enough there. If it had had more attention from statesmen, socalled, they would not have been so eager to feed the southron on the Nordic meat broth of democracy. The doctor, like his master Hippocrates, quickly finds out that health rules differ in Siberia from those in India and the theories of medicine in the history of thought must be viewed with an eye prompt to note the weather. As we cross isothermal lines from the equator to the pole it is not alone the habits and the color of the skin of man that changes, but the color of his thoughts also.

Nevertheless whatever may be the variation in things variable, there are some fundamentals of thought which do not change with airs, waters or places or time. Deficiency and repletion, the doctrine of opposites and the doctrine of similars and the doctrine of equilibrium are not altered by latitude or longitude. The intellectual problem which interested Empedocles in Mediterranean airs twenty-five centuries ago interested Hahnemann a hundred years ago among the Hyperboreans. The propagation of the thought of each resulted in much cogitation on the details of the philosophy of each epoch and each latitude. It affected the outlook of medicine in each age.

We have taken the homeopaths into the sheepfold again; how much of their doctrine of similars with them I cannot say, but it seems clear at least

that their infinitesimals have knocked out the calomel and jalap debauches of our forefathers.

GALEN

A year or two ago I ran across Christian Science in Galen (1c), or at least that is the heading under which what I had to say about it appeared in these columns (2). In Kühn's Galen it is "ascribed" to him, but it seems to me there is every reason against ascribing the treatise in which I found it to him. It is probably by some later writer, who for the moment broke away from the hot and the cold, the dry and the moist and the crass materialism of medicine, from the similars and the antagonists, and took refuge, when other things failed him, in the influence of faith or the mind on disease,—in the mysteries we are apt to believe in because there is no good reason why we should. "Why then," he asks after citing experience, "why should Christians fail to make use" of this belief? Why indeed? It was not Galen wrote this for he was no Christian, so far as we know, but in this discourse of his on the theories of Plato and Hippocrates he occupies a good deal of space (1d) in quotations from Chrysippus and Posidonius and still more in his own pungent remarks on their opinions. Plato before them, in the temper of a philosopher, had discussed the question whether infirmities of the mind are to be compared with deformities of the body or not. He thinks there is in many ways an analogy between them, but he did not go to the limits which excited the impatience of Galen. He falls upon Crysippus just as though he had not been dead several hundred years and covers him with objurgations and ridicule.

CHRYSIPPUS

Chrysippus was born at Soli or Soloe in Cilicia over against Cyprus on the mainland of Asia Minor, where they spoke poor Greek and whence the term solecism is derived. How much of oriental philosophy he absorbed before he went when still young to Athens can not be said, but there he evidently was put through a course of sprouts in Greek grammar from which he never recovered for a large part of his thought seems to have been engaged in knowing and teaching how one must pronounce words. However Attic his Greek became the extracts we read in Galen from his works seem to smack of the orientalism at his back when he was young,—not least his leaning toward Eddyism across the ages. From the long quotations,—for none of Chrysippus' work itself has reached us,—we gather he believed the diseases of the body should be treated on the same principles as diseases of the mind and that in the cure of the former the state of the mind was a large factor if not the largest factor. Thus far he appeals to us, but Galen is in as much of a pet about Chrysippus as we are about Mrs. Eddy, who is dead also. Plato earlier and Posidonius later laid much stress upon this more reasonable side of the question, but Galen, whom we often suspect guilty of misapprehension or even of misquotation and of downright lying on occasion, quotes sentiments and theories from Chrysippus which are of the same nature and quite as absurd as any I have seen quoted from the late lamented lady, whose churches are crowded with former occupants of other temples of worship, now empty, and with many who never before saw the inside of a church at all. The psychiatrists and psychical methods of cure crowd our modern temples of Aesculapius about as much.

EARLY FAITH CURES

However much we may disagree about the influence of cults outside of medicine on medical practice and theory it would seem that the ancient men of our cloth were well acquainted with the influence of such environment. It seems from the record in Galen (1e) Chrysippus got his ideas through Epicurus and Zeno of Citium, for disease according to their doctrine is largely, dependent on what is thought desirable and what is to be avoided. Something of the idea has had, how far back I do not know, a crystallization in the old joke. "She enjoys constant bad health, thank you." Variations in health and disease (the kind of disease we are familiar with as amenable to the mind cure treatment?) are due to the rise and fall of irrational impulses or fancies, but Chrysippus seemed to separate disease from fancy and Galen impatiently and scornfully remarks: "Just as though a man reasoning falsely *needs* to be distinguished from an animal or a stone void of reason." That kind of thing is not so devoid of symptoms it can not be recognized,—it is not a thing overlooked by investigators,—it is a force of the soul disobedient to reason. This tendency to carry the thing too far does not come out to meet us in the works of Plato and the opinions of the earlier philosophers, but in Chrysippus who, after Zeno, took his place at the head of stoic philosophy in Athens, we plainly see the germ thought of the mind cure and faith cure three hundred years before Christ and five hundred years before Galen.

BACK TO ZENO

Through the critical mind of Galen and his sharpened wits we penetrate back of Chrysippus to Epicurus (342 B.C.) and finally, as with all philosophy that is worth while, Plato (428 B.C.). According to the given chronology, an exceedingly weak reed to lean on, Chrysippus (b. 280 B.C.) may, as a boy of 16, have seen Zeno (d. 264 B.C.) when he was very old, but he could hardly have had much of his wisdom from his lips. So far as chronology goes however in this case it is indicative that as early as Zeno at least such theories of disease—and this is essentially a stoic tenet—must have pervaded Athenian thought.

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1. Opera Omnia Claudii (Kühn). a. Vol. V, p. 280. b. Vol. V, p. 666. c. Vol. XIX, p. 679. d. Vol. V, p. 435. e. Vol. V, p. 367.
2. May 7, 1924.

Bismarck and Medicine.—Bismarck ran through twenty-nine physicians before he at last came to Professor Schwenninger, who succeeded in reducing his fat. The result was not achieved without much personal friction. Schwenninger, in his first interview, pestered his patient, the Iron Chancellor, with so many questions as to his habits of life that at last the prince lost his patience and said, "You ask me too many questions."

"Very well," said Schwenninger, "you go to a veterinary surgeon, as he won't ask you any."—*London Evening Standard.*

Contributors to the Science of Medicine

David Hayes Agnew*

An Estimation

JOHN B. DEAVER, M.D.
Philadelphia

It would be an alluring pastime to picture the elect of a former day returning to the sphere of their activity and viewing the vast changes that had taken place since they had ended their earthly sojourn. The great doctors among such spirits would certainly be impressed with the methods in vogue, the various refinements of, and adjuncts to diagnosis and treatment, the bewildering multitude of specialties and the wealth of associated branches of their art. They might possibly look with envy on the opportunities for study and practice of which they scarcely dreamed and which if they had had might have added to their own efficiency and glory. But one cannot help wondering whether their admiration and perhaps their envy would not be tempered by a certain degree of pride in what they were able to accomplish with the simplicity of equipment with which they worked depending mainly on the training which enhanced their own natural gifts and senses.

Prominent among such spirits would stand the master surgeon, the inspiring teacher, the loyal friend, David Hayes Agnew. Although in the later years of his career he was privileged to enjoy some of the advantages of modern surgical procedure, and indeed was among the first to adopt the newer ideas of antisepsis and asepsis, his early training covered the pre-Listerian methods.

In honoring his memory this evening we are doing honor only to ourselves. To me, then, it is a double distinction to have been assigned the privilege of recalling some of the characteristics of this towering figure in the medical world both to those who may have known him and to a younger generation that knows him only by tradition.

The world at large sets up its ideals for every walk in life. It probably has a loftier conception with regard to what constitutes the ideal physician than appertains to other professions. The reason for this is not far to seek. For to none other is it given to have an individual, in his hour of greatest need, place himself so confidently in another man's hands. With whatever force this may apply to the physician, its meaning is increased to the utmost degree where the surgeon is concerned. Dr. Agnew met this demand as few others have done.

To the youth of his day, who were fortunate enough to come under his personal influence, no less to the patients, who came under his ministrations, his presence was dignified and inspiring; his conduct at the bedside direct and to the point and withal sympathetic. This direct earnestness in the class room brought him the respect, admiration and love which remained with his students and colleagues throughout his life. All these traits were but the reflection of what was perhaps the outstanding characteristic of Agnew as a man—the devout, loyal, faithful Christian gentleman. The sincerely religious faith of this man of science spread its halo around his every act and hallowed the name of surgeon as a real healer of the sick.

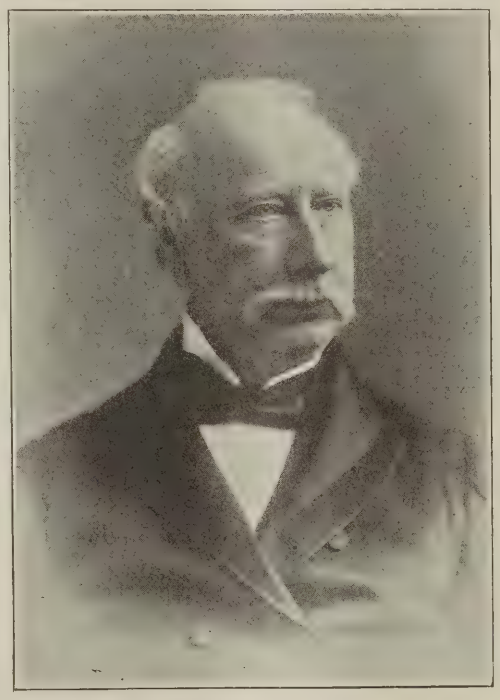
It was as a teacher that his personality was at its best. He was impressive because of his simplicity—simplicity borne of complete command of his subject. His language was clear and concise and could not fail to make his explanations of the most difficult subject comprehensible to those who sat at his feet. His mastery of his subject was the result of years of painstaking study and dissection. In these days when surgery is so attractive to the budding doctor that in his dreams the road to mastery appears a short and direct one, it is well to remember that what made Agnew the master-surgeon were his love of the work, tireless industry and marvelous patience carried on through years of preparation. Early he realized that anatomy is the mother of successful surgery and was convinced that to become preeminent in his profession a surgeon must needs spend a number of years in the practical demonstration of anatomy. These principles were the basis of his greatness and the facts of his life exemplify his theory.

Agnew's determination to become a surgeon came after his early professional career had been interrupted by the allure of a business venture, into which, for family reasons, he felt obliged to enter. Fortunately for the realm of surgery, the venture proved unsuccessful and he eagerly resumed his medical career, the love of which was part of the very fibre of his being.

For a short time he practised in a country village, but in spite of a growing and successful practice, his early dream of becoming a surgeon dominated his thoughts, and he set about to realize his ambition. Securing his anatomical material from Philadelphia he began to study and dissect in the privacy of his own home—established a laboratory of anatomical research would be the sonorous term applied today to this modest beginning of a brilliant future. Surrounded by narrow minded village gossips, his work naturally aroused the suspicion of his neighbors. Unable to dispel the doubts and distrust and to quell the criticisms which his studies aroused among the villagers, he determined to endeavor to satisfy his aspirations in more congenial surroundings. Unheralded and unannounced he came to Philadelphia where he began his career in that unique and interesting institution, the Philadelphia School of Anatomy. It would be carrying coal to Newcastle, I fear,

*Read before The College of Physicians of Philadelphia, December, 1925.

to launch into a description of this famous school, but an audience like this are especially interested, as it is in the annals of medicine, of which that school is so integral a part. There is little doubt that it was a tremendous factor in establishing the early fame of Philadelphia as a Surgical and Medical Centre, for its list of demonstrators and teachers comprises names to conjure with in the world of surgery. For ten years Agnew was the responsible head of this school. It is in the experience gained during these years wherein lies the secret of much of his success. His dissections were made always with the idea in mind of their practical application for the operating surgeon. He worked for the love of the work. He was as unaffected by the fact that his early classes consisted of only nine pupils as by the circumstance that through his personality and charm as a teacher, the gradually increasing attendance demanded the gradual addition of assistants to the number of five. He was not discouraged by the first, nor unseemingly boastful of the second. Steadily he continued his work, meeting his students each winter for 130 evenings "to discuss the high theme of God's masterpiece of handiwork." In addition to the demonstrations in anatomy, he also conducted the School of Operative Surgery where a special class was held for demonstrations of surgical anatomy of the different regions, illustrated with drawings, the skeleton, and wet and dry preparations, the course being conducted until all the operations feasible on the cadaver had been done. The students for these classes were not confined to any one school but came from the University of Pennsylvania, the Jefferson and Pennsylvania Medical Colleges, and the Dental Colleges. Adams, Agnew's biographer, has well ascribed "the secret of the grace, ease and sureness with which Agnew operated as being due to his perfect knowledge of anatomy which he learned in this school. He never had to stop to think out answers to questions in regional anatomy. He reached his conclusions as quickly and as naturally as if he were reading an open book, which justified the statement that he seemed to see the positions and relations of the internal organs of the body as well as if their coverings were made of glass."



DAVID HAYES AGNEW

In 1862 Dr. Agnew gave up his work in the anatomical department of the school and in the following years his courses in operative surgery to become demonstrator of anatomy and lecturer on clinical surgery at the University of Pennsylvania. This transfer of his activity was but a change of environment, for his service here was marked by the same earnestness and the same conscientious, untiring devotion to the work of the hour and the same consideration for the needs of the student as it had been in his earlier experience, in spite of the fact that for seven years he occupied the subordinate title and position of demonstrator.

Although he had come to the university with a reputation well established it was not until 1871 that full recognition was given his extraordinary talents, and then only after his threatened resignation did the university accord him the place he merited in the faculty by re-creating the chair of professor of clinical and demonstrative surgery and making Agnew its incumbent. This recognition came after thirty-one years of active professional life. Young men of today take note!

This acknowledgment might have come to Agnew sooner had his been an aggressive personality. But his imperturbable and calm outward demeanor was a true reflection of his innate tranquillity of soul. To those who knew him personally it was this gentleness of soul that made him the well beloved teacher, friend and medical counselor. It was also a great asset in his work at the operating table, which is well delineated in the familiar painting which graces the walls of the University Medical School.

There is no doubt but that a born surgeon, such as Agnew was, would have made his mark in the profession at any time, nevertheless a fortunate circumstance in his career was the rise of modern methods in surgery which he was among the first to adopt. It was, of course, not at all surprising that he who in his youth had had the temerity to begin his anatomical studies amid hostile surroundings should in his riper years adopt what, with his clear and intelligent vision, he realized as the greatest opportunity that had as yet come to the surgeon.

It is a pleasure to recall his entrance into the operating room. Tall, dignified, tranquil, he approached the operating table with inspiring confidence and yet with a certain amount of modesty. His manipulations were deliberate and deft to a degree that is granted to few. Some of his unusual deftness has been attributed to the fact that he was as clever in the use of his left hand as of his right, working with the one or the other quite unconscious of which he was using; but there is no doubt that the greater part was due to his remarkable delicacy of touch together with an almost unfailing sureness gained by his unusual training as an anatomist and his wide experience in practical surgery gained in diverse hospital and private practice and in his service during the Civil War. For a man of his extensive experience and as busy a man as he was it would be almost natural to develop a routine habit of thought and action, that would have closed his mind to newer avenues but such was not the case with Agnew. His adoption of

modern surgical procedures was but the beginning of his continued keeping abreast with the times, although his modernity was always tempered with a judicious conservatism.

Fortunately for the world of surgery Agnew placed these qualifications of the surgeon together with the results of his vast experience at the disposal of students and surgeons, not only by his masterly work at the operating table, which those who were fortunate enough to witness can never forget, but also by his master work on the *Principles and Practice of Surgery,* the three volumes of which form a compendium of his daily professional life for fifty-one years. Its pages breathe his personality and even to this day their contents have retained much of their value. His views on surgical diagnosis will bear repetition at this time when the refinements of diagnosis are so dangerously near crowding out the training in the natural methods the use of which stamped men of Agnew and his generation with their greatness. In the introduction to his surgery we read:

"Anatomy, physiology, organic chemistry, and physics form the ground work of diagnosis. For the proper interpretation of morbid phenomena the senses must be carefully educated and the mind trained in the precise logical methods of thought. There is a very great difference in the rapidity with which different men, of unquestioned surgical ability, form their judgments on the nature of disease or injury. There are some who reach their conclusions with a celerity which resembles more an intuition than an orderly process of deductive reasoning; while others pass over the same ground like the prudent general who fortifies every captured post as he advances into the enemy's country. On the whole, the latter are those who meet with the fewest defeats."

Agnew was not only a great surgeon, but had he chosen internal medicine as his specialty he would doubtless have achieved equal fame in this branch. He was a good physician and general practitioner, and it was his experience as such that influenced his attitude in deciding for or against surgery in a doubtful case. Conscious as he always was of his responsibility and conservative to a certain degree as was his nature, he was always glad if he could see a way of serving the best interests of his patient without the use of the knife. Let his own words express this attitude:

"Whenever the surgeon is compelled to proceed on data of probabilities, it is in most instances a good rule to *wait.* Often in my professional life, when in a maze of doubt and uncertainty, have I imitated with the happiest results the storm-bested mariner, who, in the darkness of the night, and nearing an unknown coast, casts anchor and waits for the day. A few hours of delay may open a crevice in a hitherto hidden case of disease which will be sufficient to illuminate its obscurity and resolve all uncertainties."

But when once the decision to operate was made he was fearless and unhesitating, at once a delight and inspiration to those about him.

The best proof of a man's worthiness, and especially is this true in the medical profession, is the estimation in which he is held by his colleagues. Of Agnew it may be said that he belied the fate of the prophet in his own country. The completion of his fifty years of professional activity was made the occasion of a spontaneous outpouring of the love and esteem which he enjoyed among his professional brethren. The banquet arranged for the occasion was planned entirely without his knowledge. The memory of it to those who were fortunate enough to have been there still lingers as a most happy, impressive and brilliant event. On this occasion, as throughout his life, his modest manner was significant. It is this modest and unassuming manner likewise which has made my task of injecting the personal strain into these remarks a difficult one. His influence was so subtle that almost unconsciously one absorbed it and made it part of one's own life. It is this trait of modesty that also adds difficulty to the otherwise light task of estimating Agnew's influence on American surgery. As physically he towered above most of his fellow men, so professionally he was a giant among giants. But this gigantic scientific importance takes no account of his influence in a personal way on the very large numbers who while learning from him the simple and yet intricate language of surgery, at the same time received the lessons which were to leave their impress upon their character as well as upon their conduct in the pursuit of the profession which he termed the highest and noblest that a man can choose for his calling. As he admonished his students on the occasion of his last lecture to this class, so it may be said of him that he truly aimed and succeeded in elevating his life and rounding it off "in the fullness of an undeviating regard for duty and high purpose." In short, he was "a good man and true, a good physician and a pure and good and honorable citizen."

The Popular Teaching of Child Welfare in France.—In 1860 a Paris doctor named Carron invented the word *puericulture,* meaning simply the rearing of babies, or what we now call postnatal child welfare, writes Dr. L. Devraigne (*World's Health,* September, 1925). He had the idea—a bold one at that time—of giving a course of lectures on baby welfare to mothers of families. It required nothing less than the intervention of an important minister, Victor Duray, to obtain the necessary permission, but the word alarmed and shocked the narrow minded, with the result that the lectures were not a success, and, worse still, the word fell into disuse.

In 1892 Pierre Budin introduced into his department at the Charité in Paris the first baby welfare clinic, which one of his pupils, Dr. Henri de Rothschild, later renamed the School for Mothers. At about the same time the milk centres of Variot and Dufour de Fécamp were inaugurated for the distribution of good sterilized milk. Since it was possible to affiliate these baby welfare clinics with all charitable organizations for mothers, they were quickly adopted by maternity clubs, mothers' canteens or free restaurants for nursing mothers, and later by lying in homes and maternity hospitals.

The other side of child welfare—careful watching of the development of pregnancy—has been emphasized by obstetricians since Tarnier, who in 1875 demonstrated the value to pregnant women of a week's strict diet for preventing difficult labor. In 1877 Pinard laid down the rules for the regular and systematic examination of expectant mothers.

Editorial Articles

LONGEVITY

In the *London Times,* 1925, there were reported the deaths of 352 persons of over ninety years of age. Of these 104 were men and 278 women; of the latter 153 were married. The number of those who reached a century was twelve; of these only one was a man, the eldest being a married woman of 104. Ten others, one man, were ninety-nine. Besides the above named, 109 attained their ninetieth year. The number of nonagenarians whose deaths have been reported in the *Times* during the past eleven years is 3,535, the great preponderance being females, of whom a very large majority were married. The centenarians for the same period number sixty-seven.

The oldest freeman in the United States in 1925 was 107, as also was a lady who died during March in Nova Scotia. The senior man in Canada lived to be 108 and died in June. But "the pride of place" in 1925 must be allotted to Charlotte Nava, who died near Pau, aged 110, of whom it was stated that she had been a servant in the Bovis family for ninety-eight years. She had never had a serious illness.

The first census of Persia, which has just been completed, reveals an unusual longevity among the peasantry of the country. In one village at the foot of the Alwand Mountains lives a woman by name Mina, who is 146 years old and has a son 117. It is stated that these hardy mountaineers, living in extreme poverty in ramshackle huts, live principally on bread and milk, with meat a rare article of food.

THOSE COMMON COLDS

Common colds are common enough, for, according to the Public Health Service study, not more than ten per cent. of us are immune, and each averages about two attacks a season. Whether we be rich man, poor man, beggar man, thief, about forty per cent. of our annual, housed up sickness and loss of time from work is due to respiratory diseases of some sort among which colds are predominant. Despite efforts to teach us to the contrary, those who work out of doors, as delivery men, telephone linemen, etc., have more sickness and loss of time from these causes than those who work indoors.

If we were to continue with our jingle, we believe the doctor, with all his exposure, would be found to have no more cold than the lawyer, merchant, or chief.

Henry M. Warren, in a delightful historical address, reminiscent of Portsmouth, N. H., published in the *Boston Medical and Surgical Journal,* tells how, in the good old days, in that city the "flower of youth and beauty" of Portsmouth were congregated in May and June at Shapleigh's Island to be inoculated with the smallpox. "The majority were perfectly well, and made of the affair a holiday festival of the gayest description." "These parties were made social gatherings and people spent a summer month in this manner instead of going to a watering place."

Until proud "science" in the form of some new Jenner (bless his real name!) comes down from measuring the stars or up from antagonizing atoms or investigating the mentality of parameciums and invents some way of preventing our most common ailment, we do not see but that the happiest solution of the problem would be to emulate the example of our forefathers and mothers and make a social event of this cold taking. We could gather together in up to date undress, with wet shoes and stockings, jazz a bit, and sit in a cold draft thereafter, chatter intimately, cough and sneeze communally, and otherwise lead a natural life. We could then top off the cure with hot lemonade (since the stronger remedy is now too expensive and dangerous), rest between blankets for a couple of days and then go about our business, knowing we were safe for some three months, when a second "cold party" would be the appropriate social event of the day.

What an array of medicinal cures we have had to prove the ineffectiveness of them all! Does anybody now prescribe rock candy with or without whisky, or is it known at all to the present generation? Is Dover's powder still prescribed? We have not heard of it for a coon's age. Perhaps the finishing touch was put to Dover by Harrison?

STATISTICS OF CANCER

It is asserted by some statisticians that cancer is greatly on the increase, while others contend that the increase is but slight. It has become almost an article of faith to believe that cancer is both alarmingly prevalent and the cause of a continually augmenting number of deaths. The report therefore issued recently from the statistical bureau of the New York Metropolitan Life Insurance Company is refreshingly encouraging. This report of a most careful statistical inquiry into the prevalence of can-

cer, covering a period of fourteen years, states that while cancer has increased it has not made the rapid headway with which it is credited by many students of the problem. Dr. Louis L. Dublin, the chief statistician of the company, and his assistants give the most reassuring report of the cancer situation which has ever been given. It is reassuring because it is both comprehensive and analytical. In the opinion of the authors the increase in cancer has been small, much smaller than might be inferred from analysis of the published crude death rate.

More accurate diagnosis, no doubt, has something to do with the increase or apparent increase, although it has been stated recently that a large number of postmortems on cases reported as cancer have proved that the disease was not malignant. However, more accurate diagnosis has brought about the recording of cases which a few years ago would not have been detected. Another reason for the increase is the lengthening of the span of life, cancer being notoriously a disease of advanced age.

One of the most interesting points brought out by Dr. Dublin and his coadjutors is that the increase, such as it is, has been confined almost entirely to males. There has been little or not increase among women, although the death rate from this disease has always been higher among women. Another point is that the white race is more susceptible than the colored.

On the other hand, certain forms of the malady are more fatal to one race than to another, and it has long been known more fatal to one sex than to another.

So far as race is concerned, the Russian immigrants seem most susceptible, the Irish next, and the English, Scotch and Welsh in order next. The Italians are an exception, the cancer rate among the Italians being less than that among native born Americans. At first thought, this difference might appear to be a question of diet, the Italians being largely vegetarians, or, at least, small meat eaters. But Dr. Dublin goes on to point out that according to the conclusions come to by the company's statistical analysis, the cancer rate increases as we go down in the economic scale. If this be so it appears to show that cancer is not stimulated so much by overeating and luxurious living as by a faulty diet. This may be explained to some extent by the fact that the diet of the poor urban population is largely canned food and food of a nature not so nourishing and digestible as that obtainable and eaten by their more prosperous brethren. Such a diet, by its indigestibility, might tend to irritate the mucous lining of the gastro-intestinal tract and at the same time, by its innutritious character, release the body's powers of resistance. These two conditions, local irritation and lowered resistance, cancer authorities state are the most frequent factors in the causation of the disease.

The report states that between the ages of thirty-five and fifty-five, it is probable that there has been an actual decline in the percentage of women who died from cancer, and no increase in the percentage of men. This it is thought may be due in part to the campaign of education carried on during the past decade, and to the number of lives saved or prolonged by early surgical intervention.

While the report referred to is encouraging, it will not do to lapse into a fool's paradise and relax our efforts to conquer the disease. Cancer stands high on the list of deadly diseases and is in many ways the most loathsome and terrible scourge of the human race, and especially of the civilized human race. Every means should be put forth to prevent it; perhaps the day is not far distant when it will be possible to immunize against the disease. At the present time our main hope lies in early diagnosis and early surgical treatment, aided when necessary by x rays or radium. To this end efforts to educate the public as to precancerous symptoms or early symptoms of cancer should be redoubled.

ACTIVITIES OF THE PUBLIC HEALTH COMMITTEE

The Public Health Committee of the New York Academy of Medicine has recently published a summary of its work during the year 1923, which bears witness to the wide scope of the Committee's activities and the definite benefits resulting from them. The largest single piece of work of the year was a survey of existing facilities in New York City for promoting child health, a study made possible by a grant from the Laura Spelman Rockefeller Memorial. One of the significant findings of this survey was the fact that much uncorrelated work is being carried on by both municipal and voluntary health agencies. The study deals with the problems of infant care, preschool and school hygiene, the work of baby health stations, maternity clinics, day nurseries, camps, hospitals for contagious diseases, and other agencies.

Another significant piece of work done by the Committee in 1923 was the preparation, in response to an inquiry from the Committee on Nursing of the Buffalo Academy of Medicine, of a report emphasizing the following points as regards training of nurses: 1, that the course of training be shortened to cover not more than two years; 2, that the curriculum be revised and more stress laid upon practical experience; 3, that the first year of training be planned so that nurses unable to continue training for

causes other than moral or mental deficiency be allowed to qualify as nurse attendants and as such be eligible for license examinations; 4, that graduate nurse attendants be permitted to work in hospitals; 5, that in planning revisions of the curriculum, the advice and guidance of the medical profession be sought.

The Committee voted to offer its services and assistance in the carrying out of the Milbank Memorial Fund health demonstration to be given in Manhattan in the Bellevue-Yorkville District, comprising an area bounded by East Fourteenth Street, Sixth Avenue, East Sixty-fourth Street and East River. A special committee was appointed to study the causes of the present increasing puerperal mortality rate in New York City and to advise action to be taken by the State. Representatives of the Public Health Committee were invited by Governor Smith to a conference in Albany on outstanding health needs of the State such as health centres for rural communities, drug addiction, and the medical practice act. Advice and suggestions were given along these lines.

Other recommendations were that in all hospitals a Wassermann test be made in every obstetrical case, preferably before admission to hospital; that a coordinating body be organized in New York for formulating medical and administrative standards, particularly in the case of institutions for convalescent care, so that a proper adjustment between supply and demand be brought about; uniform recording of hospital information; and the extension of proper clinic facilities for maladjusted children and the establishment of preventoria for mental and nervous conditions. Special studies completed and now being conducted are of pollution of city air, the medical significance of occupational therapy, Coué-ism, "religious healing," and the desirability of nurse anesthetists.

Legislation affected by the committee's decisions included their advice against changing the present law requiring that children factory workers receive a certain number of hours of instruction during the day, not in the evening after a full working day; the drafting of a bill providing for a board of control to assume the responsibility for meeting the demands of the anatomical departments of the schools of New York State, and to facilitate the administration of the proposed autopsy law, which will enable the hospitals to perform an autopsy on every case if no objection be registered against it by the next of kin within forty-eight hours after notification of death, opposition to the bill introduced at the last session of the New York Legislature giving to employees on the Civil Service list the right to court review under writ of certiorari in case of dismissal, on the grounds that it would be difficult for a health officer or administrator of a hospital to maintain discipline if he were not able to dismiss inefficient employees without so many legal technicalities.

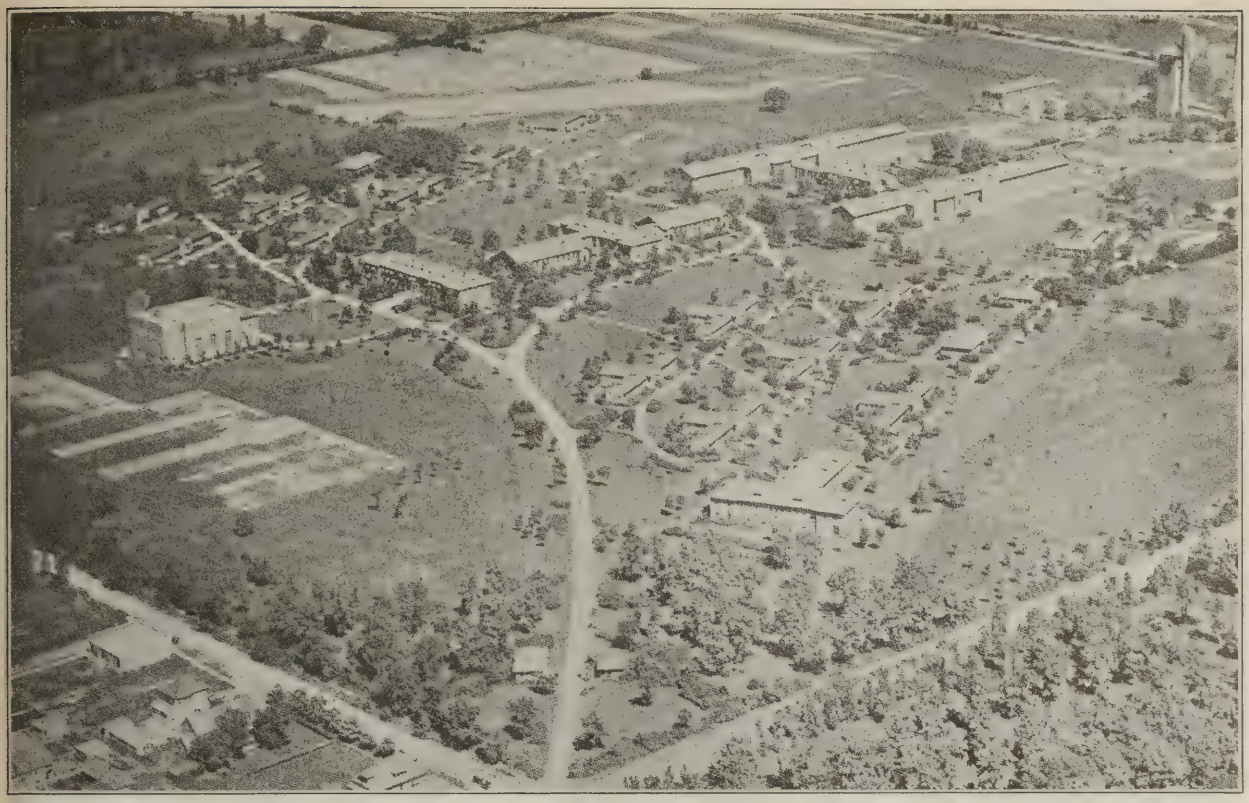
GROUP DIPHTHERIA IMMUNIZATION

There is a growing feeling among public health workers that the Schick test should be abandoned in the immunization of large groups of children. In fact, there are those who believe that it is a useless procedure both in private and public health practice. Kellogg, who has had a wide experience with the toxin-antitoxin immunization procedure in his capacity as director of the Bureau of Communicable Diseases of the California State Board of Health, believes that the Schick test is subject to errors in application which more than offset its informative value.

He points out, in a recent article in the *American Journal of Public Health,* that the causes of errors in the application of a Schick test are due to faulty techic of injection and possible variation of skin reactivity in different areas of the body, that there are many errors in the interpretation of pseudo-reactions, that errors occur from deteriorated toxin, and that lack of experience in the use of the test multiplies all possible sources of error. He has evolved an intracutaneous guineapig test which is convenient and accurate and may be used when it is especially desired to obtain accurate knowledge of the immunization status. Except in such cases he believes that the Schick test is of academic interest only.

His views coincide with those of a considerable number of public health practitioners. False negative readings result in the failure to protect nonimmune children by toxin-antitoxin immunization. Practical tests have shown that in certain age groups practically all children are nonimmune, and since the public health control of diphtheria in the present state of our knowledge depends upon the wholesale artificial immunization of all children, it is believed that, as a practical measure, it is better to immunize all children without reference to their Schick test than to leave even a few unprotected by reason of errors in technic in the application of the Schick reaction.

This is of special interest to the physician in private practice. The general public is learning a good deal about diphtheria immunization and the family physician should be able to give advice and to produce immunization by the toxin-antitoxin procedure. It is certainly true that in those localities where this has been generally done, diphtheria epidemics have ceased to occur. Certainly it is wiser to apply a single operation and do it well than to subject the child to two with a considerable possibility of error.



AIRPLANE VIEW

The Chicago Municipal Tuberculosis Sanitarium

JOSEPHINE COLEGROVE
New York

In spite of advantages in climate and altitude in certain sections of the country, the majority of tuberculosis patients must be cared for in and also by the city where they happen to live. An example of thoughtful and efficient provision for such care can be found in the Chicago Municipal Tuberculosis Sanitarium.

The first tuberculosis clinic in Chicago was the West Side Dispensary of the Jewish Aid Society, founded in 1900 by Dr. Theodore B. Sachs, who is more than any other man responsible for the building of the Municipal Sanitarium. In 1907 the Chicago Tuberculosis Institute was started, with Dr. Henry Favill as president. Its purpose was to give dispensary and nursing service, and the first dispensary was located in a settlement known as Olivet House.

The Glackin Tuberculosis Sanitarium Act was passed by the General Assembly in 1908, giving a city or village the right to determine by direct vote of the people whether or not it would assess taxes for tuberculosis work. In Chicago the vote was taken in 1909 and the majority in favor of such taxation was over one hundred and twenty-eight thousand. The first tax produced $477,000, and the road was open.

For many years Dr. Sachs had dreamed of the ideal tuberculosis sanitarium, and for the two years following the passage of the act he worked daily on the detailed plans. One hundred and sixty acres in the northwest section of Chicago were bought, and the work started and carried on through the vicissitudes of Chicago political life. These led to a suit against the city by contractors who felt they had failed to receive their share of the largess of municipal building. The result was the death of Dr. Sachs, by his own hand—his last note read, "Some day Chicago will know that Theodore B. Sachs loved her."

The sanitarium has a capacity for nine hundred and forty-two patients, about two hundred of whom are children. There is a waiting list of five hundred. Incipient and advanced cases are accepted. Admission is made only through the dispensaries.

From the illustration may be seen the general arrangement of the buildings; the general infirmaries, two groups of open air cottages for ambulent patients, the laboratory, the theatre, the nurses' home, the administration building, and the necessary farm buildings. Building construction is of brick and concrete. The most recent addition is a shelter house for visitors and for visiting children who are not allowed in the sanitarium. Skillful landscape gardening has made the grounds exceptionally attractive and noninstitutional in appearance.

An integral part of the work is the functioning of eight tuberculosis dispensaries, located in crowded sections of the city. Each has a dental clinic, and two orthopedic clinics are conducted. Nursing service is provided for cases receiving home care, including private cases after the dispensary physician has visited the home.

The organization chart of the sanitarium shows a board of directors of three, to whom the general superintendent, Mr. John F. Berry, is responsible. The superintendent of the sanitarium, Mr. Charles A. Reading, and the superintendent of the dispensaries, Dr. Clarence L. Wheaton, are responsible to him. Dr. Peter S. Winner is medical superintendent of the sanitarium.

The biennial report of the sanitarium for the two years ending in 1924 showed approximately sixteen per cent. more admissions of cases of far advanced tuberculosis, with a corresponding decrease in the proportion of incipient cases. In the year 1924 the total number of patients treated was 2,833; these patients remained an average of 29.9 weeks. An average of half the cases admitted are discharged as arrested, quiescent, or improved. Discharged patients are instructed to report either to their private physicians or to the dispensary. Dispensary reports showed a total of 33,384 patients under supervision during the year, of whom 21,481 received treatment. New dispensary patients numbered 4,780. For the city as a whole, over 22,000 diagnosed cases of tuberculosis were recorded, of whom 2,000 were open cases.

The health department enforces a rule that no child under sixteen years of age shall be present in the home of a positive sputum case of tuberculosis. Either the ill person must leave the home, or the child must be removed. The municipal code provides for forcible hospitalization of the patient when this is found necessary. All cases of tuberculosis are reportable, and assigned to the proper dispensary district. Private physicians" cases are recorded as such, but these are visited by one of the nurses, the premises inspected, and an investigation made of whether the patient is carrying out instructions. If the patient has stopped the services of the private physician, he automatically comes under the care of the dispensary.

The research laboratory of the sanitarium is under the direction of Dr. Henry C. Sweany. A finely equipped three story building was finished in 1914. The work is divided into the two natural groups of routine and research, for which an annual appropriation of about fifty thousand dollars is made. The personnel consists of the director, assistant director, physiologist, chief chemist and assistants, serologist and bacteriologist and assistants, tuberculosis research operator, librarian, curator, pathological technician, and patient assistants of various degrees of skill. New methods in routine work have been adopted wherever they have been found practical. Routine blood counts are made on all patients. Vital capacity and blood gas apparatus have been installed. Complete bacteriological slides are done on autopsy material.

OPEN AIR COTTAGE

The general aim of the research work has been to gain a better understanding of tuberculosis and related conditions, to develop the means of making an early diagnosis, and to produce if possible a therapeutic agent. Papers by members of the staff are published from time to time in medical journals. An elaborate monthly bulletin for the lay public is also published.

In a disease such as tuberculosis, the food of the patient is an important part of his treatment. No effort is made to economize on food other than to avoid waste and careless buying. Fresh eggs are served the year around, and cream instead of milk is used for cereals and coffee. Sanitary milk urns are installed easily accessible to all patients, who are

allowed all the milk they care to drink. A farm of some seventy acres and six greenhouses provide the greater proportion of the vegetables used. A bakeshop furnishes over four hundred loaves of bread daily, besides rolls and pastry. Special menus are prepared for patients suffering from diabetes, nephritis, or stomach disorders. All dishes and silver are sterilized by live steam.

The sanitarium assigns fifty physicians for tuberculosis work in the public schools, and the same number of nurses. Cases of suspected tuberculosis are sent to one of the municipal dispensaries for a more thorough examination. The child may then be assigned either to one of the open air rooms at school or to the children's section of the sanitarium for observation and treatment.

The first of the open air school rooms was established in 1909 by the Chicago Tuberculosis Institute and the Board of Education; funds for extending the work to all the schools of the city were given by the Elizabeth McCormick Memorial Fund. Ordinary classrooms are used, ventilated by open windows. Cot beds for an hour's rest daily, and work to all the schools of the city were furnished for each child. A noonday lunch, which must be eaten at the school, costs the child five cents. Nearly two thousand children are cared for. Anemic and undernourished children are received as well as those who have been in contact with cases of tuberculosis or who show signs of glandular involvement. Active cases and subnormal children are not admitted. Careful records are kept, and the child is returned to the regular classes when improved.

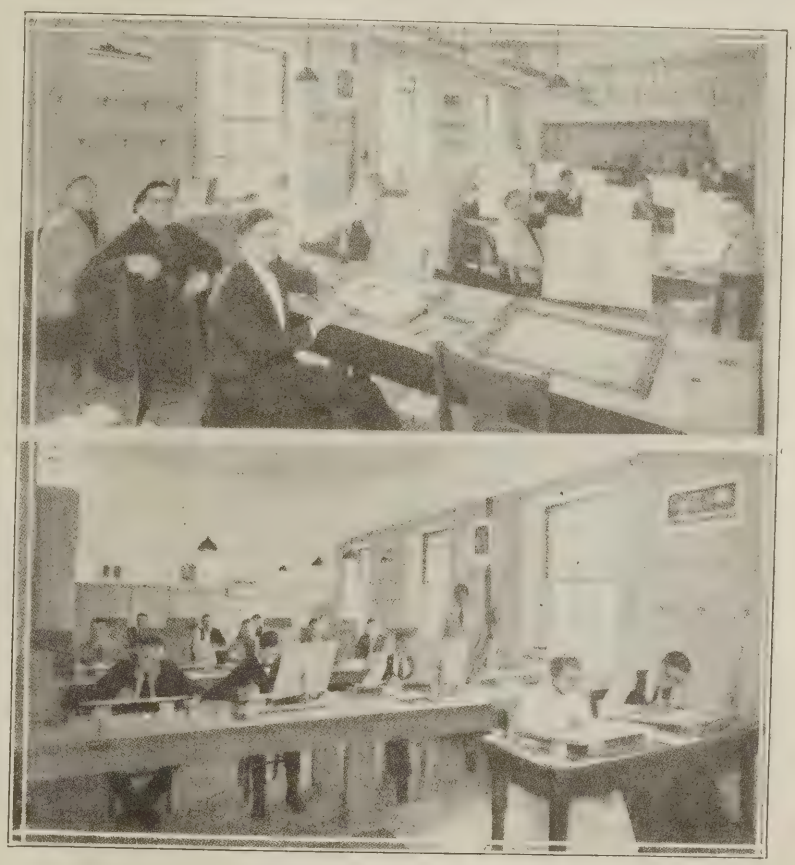
Undernourished children and those predisposed to the disease are cared for during the summer vacation in a tent colony at the sanitarium.

One of the interesting features of the sanitarium is its educational department. Kindergarten, elementary and high school grades, and vocational training are maintained by the Chicago Board of Education—all conducted as open air classes. The work in the elementary grades is the same as that in other city schools. In the high school English, civics, Spanish, science, algebra, geometry, and commercial subjects are taught.

The vocational division not only furnishes a means of seemingly shortening the tedious hours of illness; it is also a direct aid in the future rehabilitation of the patient. Training is given in occupations which will not be detrimental to the health, in the event that some change must be made; and impetus is provided for the utilization of special talents and aptitudes. Classes are held in dressmaking, commercial art, telegraphy, typewriting, barbering, beauty culture, bobbling, carpentry, pharmacy and laboratory work. There has been an enrollment of over twenty in the commercial art classes, and several of the students in being discharged from the sanitarium have been able to continue the work professionally. Training in laboratory work is sufficiently thorough that pupils have been able to take positions as clinical laboratory technicians and bacteriologists.

A beautifully designed theatre faces the administration building. Plays and pageants are produced by the children, and vaudeville and moving picture shows are presented for the benefit of the ambulent patients. Radio sets and reading material are furnished for bed patients. An open air band plays during the summer, and outdoor sports, under proper supervision, are encouraged. The Chicago Public Library has a branch at the sanitarium, and nearly a thousand books a month are circulated. Catholic and Protestant services are held on Sunday.

Social service assistance is provided so far as possible for both sanitarium and dispensary patients. Clothing is supplied by the Service League, an organization of club women in the city; over a thousand patients yearly are helped in this way.



COMMERCIAL ART CLASSES

One of the activities of the sanitarium is the fitting up of outdoor sleeping porches for patients at their homes. Accurate measurements are taken and curtains are carefully fitted to protect the patient in bad weather; blankets are provided. About seventy-five new porches are arranged each year; there are now some four hundred in the city.

From this sketch of the Chicago Municipal Tuberculosis Sanitarium it will be seen that the law has granted it unusual scope for its activities, and that this opportunity is being utilized with skill and devotion.

News Items.

Harvey Society Lecture.—Dr. Knud Faber, professor of medicine of the University of Copenhagen, will deliver the sixth Harvey Society Lecture at the New York Academy of Medicine, Saturday evening, March 13, 1926, at eight-thirty. His subject will be Historical Lines of Therapy.

Medical Mission.—A medical clinic will be established in Cheng Mai, Siam, by Dr. Harry M. McClanahan, of Omaha, in memory of his wife. Dr. McClanahan has recently sailed for that country.

Motion Pictures for Leper Colony.—About two hundred reels of film have been collected by the Motion Picture Producers and Distributors of America, which have been shipped for use at the Palo Seco Leper Colony, near Balboa, Canal Zone.

Dunham Lectures.—Four lectures under the Edward K. Dunham Lectureship for the Promotion of Medical Sciences have been given at Harvard University by Dr. Ross G. Harrison, of Yale. His subject was Recent Advances in Experimental Embryology.

William Beaumont Memorial Fund.—This fund has been presented to the University of Illinois Medical School by Dr. Frank Smithies, of Chicago, to encourage research in the functioning of the digestive mechanism. The first annual reward will be made in 1927.

Smallpox in England.—Nearly three times the number of cases of smallpox have been reported in England for the period from December 12th to January 9th—a total of 960 cases. The cases are mainly in the northeastern part of the country, and appear to be of a mild type.

Gift to Phipps Institute.—Mr. and Mrs. Henry Phipps, of New York, have offered $500,000 to Phipps Institute of the University of Pennsylvania on the condition that the university raise an equal amount. This institute, for the study and prevention of tuberculosis, was founded by Mr. Phipps in 1908, with a gift of $1,300,000, and later gifts aggregated $2,000,000.

Convalescent Home.—A new convalescent pavilion for crippled children has been opened at Camp Hillcrest, Fayetteville, Onondaga County, New York, with accommodations for fourteen boys and girls. This is the gift of the Syracuse Rotary Club and other interested organizations. The cost for the care of the children is met either by the parents or by charitable agencies.

Hospital News.—The Brooklyn Jewish Hospital has completed raising a fund of $1,500,000 which insures the building of a new wing and other additions.

The hospital for students of the University of Illinois, at Urbana, donated by Senator William B. McKinley, of Champaign, has recently been dedicated.

The City Hospital of Indianapolis has laid the cornerstone for a new $385,000 surgical unit.

A mental hygiene clinic has been established at Lebanon Hospital, New York.

Graduate Study.—Courses in oral surgery, anesthesia, exodontia, and oral diagnosis have been arranged by the Joint Committee on Graduate Education of the Long Island College Hospital Medical College and the Medical Society of the County of Kings. Dr. Bertram B. Machat and Dr. Mendel Nevin and their staff will conduct the classes at Greenpoint Hospital, Brooklyn, beginning April 5th.

Personal.—Dr. I. Arthur Stoloff has been appointed associate visiting consultant in surgery at the New York City Children's Hospital, Randall's Island; he has also recently been promoted to assistant professor of minor surgery at the New York Homeopathic Medical College and Flower Hospital, and assistant attending surgeon to the Flower Hospital.

Dr. John Oberwager, of the health department of New York City, has been advanced to the office of general medical expert, to deal with problems concerning the various branches of the medical service of the department.

Dr. Harry D. Orr, of Chicago, has been appointed surgeon general of the Illinois National Guard, succeeding the late Dr. George C. Amerson.

Dr. J. Coleman Scal has received an appointment as assistant visiting otolaryngologist to Gouverneur Hospital.

Dr. J. J. Golub has been appointed assistant director of Mount Sinai Hospital, New York; he was formerly medical director of Beth Moses Hospital of Brooklyn.

Dr. Maxwell Maltz, of New York, will deliver a series of lectures on plastic surgery in Berlin and several other European cities.

Dr. Walter C. Alvarez, of the University of California Medical School, has accepted a position at the Mayo Clinic, Rochester, Minnesota.

Dr. Rudolph Kramer, of New York, has been made foreign corresponding member of the Society of Laryngologists of the Hospitals of Paris.

Dr. Harry Plotz, of the Pasteur Institute, France, formerly a resident of New York, has been made chevalier of the Legion of Honor.

Dr. Carl Landsteiner, of the Rockefeller Institute, has been elected a foreign member of the Swedish Medical Association.

Dr. Charles Philip Miller, Jr., of the Rockefeller Institute, has accepted an appointment as assistant professor of medicine at the University of Chicago Medical School.

Dr. W. C. Noble, of the New York State Health Department, has resigned to devote his time to a professorship in the University and Bellevue Medical College.

Dr. George L. Brodhead, of New York, has been appointed director of the obstetrical service of the Knickerbocker Hospital.

Dr. Alec Nicol Thomson, of New York, has been appointed editor of the *Long Island Medical Journal*.

Dr. Bowman C. Crowell, of Jefferson Medical College, Philadelphia, has been appointed associate director of the American College of Surgeons.

Dr. Louis M. Warfield, of Milwaukee, has been appointed clinical director of the Milwaukee County Dispensary.

Society News and Notes.

The *Ligue nationale française contre le péril vénérien* organized a conference on congenital syphilis between October 5th and 7th, 1925, the object having been to dispel the ignorance still existing about the nature and treatment of venereal diseases. All the leading French dermatologists participated in this congress, and the pediatrists and obstetricians as well. In addition there were more than fifty practitioners from other countries who took part in the discussions or presented papers. It was unanimously agreed as to the necessity of establishing the bases of a common doctrine on which it will be possible to build up social hygiene organizations for combating the principal evils which menace humanity. Prof. Jeanselme of the Paris Faculty of Medicine presided over the conference.

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The Playground and Recreation Association of America has announced a national contest for playground beautification. Three prizes of Five hundred Dollars each are offered to municipal and other non-commercial playgrounds making the best plans and achieving the greatest progress during the period of the contest, which closes on November 1, 1926. In addition to the above mentioned prizes, the Harmon Foundation has announced that it will give thirty-three awards for progress in attractiveness. These awards will be made primarily on the basis of photographs and statements submitted, but inspection trips have also been provided for, and considerations of general appropriateness of the work done will influence final decisions.

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The German Red Cross has recently produced a popular film on first aid in accidents. It is 1,500 meters long and takes fifty-five minutes to run. The film shows how to treat cuts, scratches, burns, fractures and sprains, and those apparently drowned or suffering from exposure. It is planned to be shown not only in public moving picture theaters, but also to illustrate lectures for factory workers, policemen, members of ambulance corps, nurses, and schools and colleges. Red Cross societies of other countries may use this film, either through purchase of copies or by applying for the rights of presentation from the German Red Cross.

* * *

At the convention in Indianapolis last October of representatives from children's hospitals and other child caring institutions throughout the country, a permanent Association of Children's Hospitals was organized, with the object that in future hospital meetings the clinical phases of institutional problems will not be submerged in administrative details. The new organization will work in close cooperation with the American Hospital Association. The next meeting will take place in Philadelphia in conjunction with the larger hospital group. The sessions will be arranged in time schedules and scope to serve everyone who may be interested to attend, and definite plans are under way to collaborate with the pediatrics group of Philadelphia to present clinics and conferences of value to hospital executives in particular and to the cause of children's medical service in general.—*Nation's Health.*

* * *

An informal preliminary meeting was held on the evening of February 12th at the home of Dr. S. Jaques Maliniak, 258 Riverside Drive, New York, to discuss plans for the organization of an International Medical Association of New York. No definite plans were made for membership, finances, etc., but it was suggested that each national organization be requested to delegate a certain number of men as representatives in forming the International Association's active membership of executive committee, with the associations as a whole constituting members at large. The objects of the new association are to be: 1, Promotion of medical science through establishing contacts between prominent medical men of foreign countries and the medical profession of New York; 2, Scientific information in regard to medical postgraduate education abroad for the benefit of Americans going to Europe and in New York for the benefit of medical men from other countries; 3, To promote the exchange of lectures and the initiation of courses of study for well known medical men abroad and in New York; 4, To promote medical contacts between the foreign medical societies of New York by arranging medical lectures and courses. Those present besides Dr. Maliniak were Dr. Samuel J. Kopetzky, Dr. Lucien Achard, Dr. Manuel Uribe Troncoso, Dr. Pol. N. Coryllos, Dr. Peter F. Amoroso, Dr. Sirgius M. Inger-man, and Dr. J. Antonio Lopez.

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An association called the Public Baths Association of Sweden has recently been formed with the object of encouraging the establishment of public baths. The association has drawn up descriptive plans of various types of cheap public baths, including exact specifications and designs. At the same time a congress met in Sweden to discuss this subject and lectures were given on different types of baths.

* * *

The Committee on Education for 1926 of the New York Academy of Medicine consists of the following members: Dr. James F. McKernon, Chairman; *Medicine:* Dr. Emanuel Libman, Dr. Arthur F. Chace, Dr. Nellis Foster, Dr. Harlow Brooks, Dr. F. B. Cross, Dr. Herbert S. Carter; *Surgery*: Dr. John E. Jennings, Dr. Charles A. Elsberg, Dr. John Douglas, Dr. John J. Moorhead, Dr. Frederick T. Van Beuren, Jr.; *Neuropsychiatry:* Dr. Louis Casamajor, Dr. Edwin J. Zabriskie; *Obstetrics and Gynecology:* Dr. John O. Polak, Dr. George Gray Ward; *Ophthalmology:* Dr. John M. Wheeler, Dr. Arnold Knapp; *Otolaryngology:* Dr. James F. McKernon, Dr. Samuel J. Kopetzky, Dr. J. R. Page, Dr. Isidore Friesner; *Pediatrics:* Dr. R. H. Dennett; *Urology:* Dr. Joseph F. McCarthy, Dr. H. M. Morton; *Orthopedic Surgery:* Dr. Charlton Wallace, Dr. Arthur Krida; *Dermatology and Syphilis:* Dr. Howard Fix, Dr. Hans Jorgen Schwartz; *Roentgenology:* Dr. Joseph M. Steiner, Dr. Leopold Jaches; *Public Health:* Dr. Haven Emerson.

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One of the results of the Child Study Conference held in New York City in October was the organization of a Council of Parent Education composed of fifteen members. The first objective of this council will be the finding and defining of the field of parent education.

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The Association of Life Insurance Presidents has already issued its reports of the proceedings of its nineteenth annual meeting held at the Hotel Astor, New York City, December 3rd-4th, 1925.

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The Gorgas Memorial Institute of Tropical and Preventive Medicine has issued an outline of its recent annual meeting, including a statement of its program for 1926. This will include an intensive campaign through the papers, magazines, radio, moving pictures, clubs, and other agencies, to promote an interest in better personal health. Every citizen in the United States will be urged to set aside one day during the year, preferably his birthday, to go to his personal doctor for a health examination. A national mosquito campaign will be conducted in which the public will be urged to cooperate with health agencies in the eradication of these insects. Arrangements are being made to begin a tropical research program, which will be conducted in laboratories which have been tendered to the Institute pending the completion of its own building. Cooperation between the public and scientific medicine will be encouraged, and a public opinion receptive to proper health instruction developed. Organization of State Governing Committees will be steadily extended and every effort put forth to complete the membership quotas as soon as possible. Present members are asked to help in this by interesting their associates and other representative medical and lay men and women in the Memorial and urging them to enroll in the Committees.

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The Institute of International Education has announced that Dr. Alfred Adler of Vienna is expected to visit the United States for an extended lecture tour in the coming Autumn.

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Officers of the New York Academy of Medicine for 1926 are: Dr. Samuel A. Brown, president; Dr. Herbert S. Carter, Dr. Frederick T. Van Beuren, Jr., and Dr. Charles A. Elsberg, vice-presidents; Dr. D. Bryson Delavan, corresponding secretary; Dr. Seth M. Milliken, treasurer; Dr. John J. Moorhead, chairman of the Committee on Admission; Dr. Frank J. Blodgett, chairman of the Committee on the Library; Dr. Linsly R. Williams, director; Dr. Frederick P. Reynolds, assistant secretary; Dr. Charles M. Williams, historical secretary; Dr. Archibald Malloch, librarian.

Book Reviews

TUMORS

The Pathology of Tumors. By E. H. Kettle, M.D., B.S. Lond., Professor of Pathology and Bacteriology, Welsh National School of Medicine, Cardiff. Second Edition with One Hundred and Fifty-nine Illustrations. New York: Paul B. Hoeber, Inc., 1925. Pp. viii-285.

In this edition the same purpose as in the previous one of providing a manual for students, which should contain the generally accepted teaching on the pathology of tumors without the mass of detail proper in a more ambitious work of reference, has been accomplished and done very well.

The first part of the book deals with the general biology of tumors, including the definition, structure, growth, innocence and malignancy, multiplicity, retrograde changes, dissemination, etiology, experimental study and treatment. The chapter on experimental study is up to the minute, including, as it does, the recent work of Gye, which has attracted such universal attention.

In Part II, the general pathology of tumors, the latter are classified as innocent connective tissue tumors, sarcomata, innocent epithelial tumors, carcinomata, endotheliomata, hypernephromata, melanomata, and teratomata.

Part III is concerned with the special pathology of tumors, dealing with the tumors as they occur in the different systems and organs of the body.

This book is ideally adapted to the needs of the medical student, whom it gives a very clear and up to date idea of what is known of tumor pathology. Numerous illustrations adorn the book.

EYESIGHT

Eyesight Conservation Survey. Compiled by Joshua Ayre Hannum, M.E. Edited by Guy A. Henry. (Bulletin No. 7.) New York: Eyesight Conservation Council of America, 1925. Pp. 219.

The scope of this report is indicated by the eight subdivisions of the subject of eyesight conservation into which the discussion is divided. These are Eye Hygiene, Eye Defects, Eye Diseases, Eyesight and Education, Eyesight and Occupation, Eye Protection, Illumination, and The Eyesight of Noted Persons. An excellent bibliography completes the volume. It is evident that the report summarizes the results of an extensive survey of the whole subject of eyesight conservation. The style of presentation is nontechnical, and for the benefit of the lay reader a section of definitions of terms is inserted at the beginning of the book. Among the activities productive of the material on which this report is based were studies of the statutory provisions of all states relating to vision tests of school children, and surveys of the public school systems of 250 of the largest cities in the United States, of 300 normal schools and teachers' colleges, of 750 colleges and universities, and of 750 industrial and commercial establishments. The statistics presented of defective vision among school children and industrial workers are a challenge to the social system. Simple acuity tests, for instance, revealed that 25 per cent. of the children in the public schools of the country have manifest defects of vision and symptoms of eye strain. Much more serious conditions were found in workshops and factories. The final chapter on Eyesight of Noted Persons includes some curious data probably never before presented. Among those persons who suffered from eye ailments were Francis Parkman, Tschaikowsky, George Eliot, Wordsworth, Theodore Roosevelt, Goethe, Swift, H. G. Wells, Balzac, and Nietzsche. Whittier was color blind and Taine was cross eyed. Relentless use of the eyes is said to have hastened the death of Balzac.

HELIOTHERAPY

Die Lichtbehandlung (Heliotherapie) in den deutschen Lungenheilanstalten. By Sanitätsrat Dr. Georg Liebe; Leipzig: Curt Kabitsch, 1926.

This is a posthumous publication by Sanitätsrat Dr. Georg Liebe on heliotherapy in German sanatoria, preceded by a tribute to Liebe by Prof. Dr. Martin Kirchner and supplemented by articles by Bochalli and Scheffer. The work itself is revised by Dr. Hans H. Meiners. Prior to writing the work, Liebe had addressed letters of inquiry to the various sanatorium directors and on the basis of the replies and his own experience he laid down the modus operandi for the treatment of tuberculosis by the air bath, the sun bath, quartz light, ultraviolet light, and deep röntgen rays. In the application of natural as well as artificial heliotherapy, nearly all reports indicated that they followed the well known principle laid down by Rollier with the necessary precautions which pulmonary tuberculosis demands. Many applied the air bath, fewer applied sun baths, but nearly all complained of lack of facilities to give the air bath outdoors, not being able to secure a large enough space or to give the necessary privacy.

Dr. Bochalli, director of the sanatorium Moltkefels, sums up the reported results by saying that heliotherapy as carried out in high altitudes for joint tuberculosis, is all important but that, while subjective improvement could be reported in many cases of pulmonary tuberculosis, not in a single instance could he come to the conclusion that any decided improvement in the condition of the lung could be ascribed to the influence of sunlight. As the result of his own experience, he says artificial light, such as quartz light, etc., seems to have a beneficial action on the cutaneous and nervous system, producing a general well being, but these results were the same as those obtained in the otherwise routine treatment at sanatoria.

Dr. Scheffer reports the success obtained with the aid of heliotherapy in chronic middle ear affections (suppurative otitis media). Of five cases reported, in four the treatment was an absolute success.

As a whole, the booklet of forty pages is well worth a careful perusal by all physicians interested in the treatment of tuberculosis, but particularly by those who are so situated as to be able to resort to the treatment of their patients by air, sunlight, and the newer devices, such as quartz lamps, deep röntgen apparatus, etc.

CHEMISTRY FOR MEDICAL STUDENTS

Anleitung zum Chemischen Praktikum für Mediziner, Theoretisches und Praktisches. von Dr. phil. Ernst Pfau. Nahrungemittelchemiker und appr. Apothekar, Oberassistent am Chemischen Institut der Tierärztlichen Hochschule Hannover. Leipzig: Verlag Von Johann Ambrosiaus Barth, 1926.

This is a very useful, highly condensed, laboratory guide for medical students' courses in medicine. Into the compass of ninety-six pages a very considerable amount of chemistry has been compressed.

PHYSIOLOGICAL CHEMISTRY

An Intermediate Textbook of Physiological Chemistry with Experiments. C. J. V. Pettibone, Ph.D., Associate Professor of Physiological Chemistry, Medical School, University of Minnesota, Minneapolis. Third Edition. St. Louis: The C. V. Mosby Company, 1925. Pp. 404.

This is a useful short summary of physiological chemistry for the medical student. The major part of the text is descriptive, is well written, and contains all that is needed. The practical exercises are limited to matters of importance, either from the theoretical or diagnostic aspects.

CHEMISTRY

Physiological and Clinical Chemistry. By William A. Pearson, Ph.C., Ph.D., M.D., Professor and Head of the Department of Chemistry, Physiological Chemistry and Toxicology in the Hahnemann Medical College and Hospital of Philadelphia, and Joseph S. Hepburn, A.M., B.S. in Chem., M.S., Ph.D., Associate Professor of Chemistry in the Hahnemann Medical College and Hospital of Philadelphia. Illustrated. Philadelphia and New York: Lea and Febiger, 1925. Pp. 306.

This is a convenient laboratory guide on clinical chemistry, interleaved for student notes. It stands midway between the laboratory guide, which contains nothing but skeleton directions, and the larger textbook on physiological chemistry. The reviewer questions whether it would not have been better to have made the book a little more full and omit the interleaving. The student would have then bought considerably more information, and a ten cent notebook would have furnished him with the necessary records of new material given him by his instructors.

DIABETES

Traitement du Diabète. Par Pedro Escudero, Grande Librairie Médicale A. Maloine. Paris: Norbert Maloine, 1925.

This French edition is not merely a repetition of the original issue in Spanish. The author has added many details, amplified the table of values of dietetic units, and appended a chapter on the therapeutic use of insulin, with a study of the problems arising in its administration, whether as to dangers, or as to results. In successive chapters we review the mechanism, causes, symptoms, prognosis and treatment of diabetes, and, particularly, its hygiene. Normal alimentary rationing and the antidiabetic regimen are then considered at length. Acidosis has a separate chapter of special value. Escuderos is convinced that regime as it always has been will always continue to be the basis dietetic of the treatment of diabetes. Insulin, he asserts, has neither modified nor simplified this treatment. It has merely rendered really efficacious.

NURSES' TRAINING

Elementary Anatomy and Physiology for Nurses, including chapters on psychology, biology, comparative anatomy and embryology. By H. Clifford Barclay, M.D. Third Edition. Illustrated. New York: William Wood & Company, 1925. Pp. 411.

The principal changes which this third edition of Dr. Barclay's book shows are a considerable enlargement, the addition of a number of plates and illustrations, a chapter on psychology, giving a brief discussion of its relation to the main theme in its individual and crowd aspects, and the addition of diet tables. These last have been added, the author states, because "the details that investigating physicians will bother with today, will become the ordinary duty of the sister and matron to know tomorrow. The probationer of today when qualified will probably be asked to arrange her diets in calories by the time she has reached the rank of a sister. I am looking ahead." Reproductions of a number of x-ray photographs have been added in this edition to the original plates.

In this as in the former editions the aim of the author is to present his discussion of human anatomy and physiology so as always to emphazise the fact that they are but aspects of that larger and more inclusive subject, biology. The book is intended for hospital probationers, but the style is so simple and untechnical that it could readily be adapted for use in high schools and colleges. The plates and other illustrations are excellent, and a good index completes the volume.

MEDICAL ESSAYS

More Things that Matter. By Lord Riddell. London: Hodder and Stoughton, Ltd., 1925.

The essays and sketches in this book, written by Lord Riddell were published originally in *John o' London's Weekly* and were republished in book form in response to requests from many readers. From several points of view the author deserves the attention of medical readers. First, because he has done a great deal for the hospitals. He is chairman of the Royal Free Hospital, London, where the students of the London School of Medicine for Women receive their clinical training, and it is largely owing to his efforts that the hospital, to use an Irishism, has been put on its feet. Moreover, in the book are two or three essays which will especially appeal to medical men. One of these entitled "Mind and Body," deals with the subject of the inter-relation of body and mind and how by the correction of physical conditions as septic teeth or tonsils or intestinal toxemia, sometimes mental disorders can be improved or even cured.

Another essay discusses the drink question, Drink: Poison or Panacea. Although Lord Riddell is, and has been always a rigid teetotaller, he is not hidebound in his outlook or prejudiced in his views on the drink question. He knows that drink in excess is harmful and he also knows that it is not essential to health in any circumstance but, at the same time he is able to perceive that it may possess redeeming features. He is somewhat inclined to agree with the conclusions of Professor Starling, who in *The Action of Alcohol on Man* (Longmans) edited a kind of scientific apologia for alcohol not long ago.

In yet another essay, under the title The New Slavery, prohibition is commented on and the arguments for and against this extremely intriguing not to say embarrassing matter are marshalled or rather referred to in good humor and impartially. He points out that prohibition is a great interference with personal liberty and states that the autocratic methods which prevail in America would not be tolerated in Great Britain even if thought to be for the good of the country. The author further points out that in Norway "limited prohibition" which means the forbidding of beer and spirits has proved a dismal failure. He wisely refrains from criticizing conditions in America, which seem very open to criticism. The law here is more honored in its breach than observance, with consequences greatly deplored by sensible citizens throughout the country. The success following restrictive measures in Britain are referred to.

The chapters on the art of public speaking, in which the author is an adept, are excellent, and the sketches of public men are particularly well done. They are for the most part finely drawn word pictures. The distinguishing feature of the book is its common sense, but common sense raised from a monotonous level by brilliant writing and the infusion of wit and humor. The book may be recommended to the medical man both as a source of information and of distraction from the woes and worries of this troublesome world.

Medicoliterary Notes.

Among articles of special interest in the *Nation's Health* for December 15, 1925, are From the Family Doctor to the Medical Center, by Dr. C. C. Burlingame, executive officer of the New York's new Medical Center; Health Problems as Shown by College Medical Examinations, by Dr. J. Howard Beard, of the University of Illinois; and Organized Advertising Attacks Medical Frauds, by Holland Hudson, of the Associated Advertising Clubs of the World.

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With a view to showing how the loss of men in the World War has affected the economic life of France, Gaston Cadoux, former president of the Paris Statistical Society, has drawn up tables showing how the 1,363,000 dead men were employed before the war, according to the *New York Times*. The biggest loss was to the land, 669,000 of the men having been farmers and land workers out of a total agricultural male population of 5,500,000. Industry gave the next largest figure with 235,000 out of 2,000,000. In commercial pursuits, 159,000 men fell, out of 1,327,000. The civil service gave 21,000 out of a total of 500,000 and the liberal professions 40,000 out of a total of less than 250,000.

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The first Chinese hospital in San Francisco has recently been opened. It is an outgrowth of the dispensary for the care and treatment of the poor which was opened in 1900 by the Chinese Six Companies. A few years ago the necessity for a hospital became evident, and fifteen different organizations banded together to raise the funds needed to build the present institution.

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The *American Journal of Public Health* for December, 1925, contains reprints of the addresses made and papers read at the fifty-fourth annual meeting of the American Public Health Association at St. Louis last October.

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The noise and clamor of modern city life are producing a race of elephant eared men and women, says Dr. Fritz Pfuffer, a Vienna ear specialist. Women will be hardest hit because they wear their hair over their ears, thus making hearing even more difficult. Dr. Pfuffer bases his prediction upon the measurements of his patients' ears during the past thirty years. The continuous strain on the auditory nerve is the cause of the change, he states.

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The Health Committee of the League of Nations has just issued its report of the proceedings of its fifth session, held October 8-14, 1925. One of the features of the sessions was the report and discussions of the work of the Malaria Commission.

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The "Wellcome" Photographic Exposure Calculator Handbook and Diary for 1926 is a practical little book for those interested in photography. Not only is the photographer told how long to expose a given plate or film, but he is told how long to develop it at certain temperatures, how to finish off his negative, and how to get the best print from it.

* * *

The Hungarian Ministry of Public Welfare has issued an order that all employees of the Hungarian State Railways, including apprentices, and widows and orphans of pensioned employees must be insured. The benefits are free medical and hospital treatment, free drugs and health resorts, sick benefits, medical and obstetrical treatment in childbed, subsidy during the last six weeks of pregnancy, further subsidy for twelve weeks after the birth of the child, and burial subsidy.

* * *

Officials of the London Zoo got the surprise of their lives not long ago. In a tank were several octopuses, one of which mysteriously disappeared. The missing octopus had a body about the size of a baseball and tentacles about eighteen inches long. The remaining octopuses were studied, especially their stomachs, for it is a well known fact that an octopus will eat a friend as well as an enemy. But there was nothing to indicate that the missing one had been eaten. The mystery grew deeper until the lost octopus was discovered one day in the act of returning. He was emerging from a small slit in the aquarium tank three inches long by one third of an inch in width. Reduced to human terms, this would mean that a Times Square traffic officer climbed through the slit in a letter box and, not being happy over what he found inside, climbed out again.—*New York Times.*

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Prof. Stanley Thomas of the department of bacteriology of Lehigh University has contributed an article of unusual interest to *Public Health Reports* for January 8 on Smallpox Vaccination as Carried Out at Lehigh University. Professor Thomas states that he is firmly convinced that education of the public in the desirability of vaccination is of greater value to the public than law enactments. He advocates the universal employment of the method of the U. S. Public Health Service, and believes that with its adoption this means of protection against smallpox will be welcomed rather than dreaded.

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An important article in the *World's Health* for December, 1925, is that of Louis I. Dublin, Ph.D., of the Metropolitan Life Insurance Company on the Excesses of Birth Control. This is a reprint of an address delivered before the Sixth International Neo-Malthusian and Birth Control Conference held in New York City in March of 1925.

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It has been computed by conservative physicians that 40 per cent. of their service is gratuitous, either through voluntary service or through clients' failing to pay the doctor's bill. A cursory survey of the gratuitous service given by physicians through medieval institutions in the Greater City of New York, based upon the number of free hospital days, aggregates $16,000,000 annually, according to a statement recently issued by the National Endowment Fund for the Physicians' Home which is being planned by prominent doctors of the country. This figure by no means indicates the total bill that the city controlled and private hospitals would have to pay if the doctor, like other professional men, demanded and received payment for each and every service performed. It is based upon the returns from but 107 of the 140 odd medical and surgical institutions giving some portion of charity service. Evaluating the physician's service nationally upon the hypothesis that outside New York City but a pro rata service in quantity is given equal to 50 per cent., and assuming that each hospital day's service was paid for at the rate of $3.00 per day, the nation's bill due the doctor would be more than $135,000,000 annually.

Abstracts from Current Literature

SYPHILIS

Clinical Studies on the Kahn Reaction for Syphilis. II. Specificity of Test.—Harther L. Keim and R. L. Kahn (*Journal of Laboratory and Clinical Medicine,* September, 1925) present the results of parallel Kahn and Wassermann tests in 2,500 cases which were nonsyphilitic. The Kahn test was negative in 2,493 cases, giving seven reactions varying from one to three plus. These results indicate a high degree of specificity.

Observations After Ten Years on a Series of Cerebrospinal Syphilitics Treated by Intravenous and Intraspinous Therapy.—George Draper (*American Journal of the Medical Sciences,* January, 1925) published in 1915 a series of cases of cerebrospinal syphilis which had been treated for from six months to two years after the manner of Swift and Ellis. Examination ten years later of the members of this series which could be reached lead him to the following conclusion:

The Swift-Ellis method of treatment undoubtedly is effective in a certain type of case, representing, according to this small but varied series, about thirty-six per cent of all cases of cerebrospinal, or central nervous syphilis.

Successful results of the treatment of cerebrospinal syphilis do not depend alone upon the spirocheticidal effect of salvarsan and mercury, there is undoubtedly some other factor developed in the course of the treatment, which successfully raises the resistance of the individual. When this resistance elevator fails to develop, no amount or intensity of treatment with salvarsan, serum and mercury can check the destructive advance of the disease.

In view of the tendency to recrudescence, all patients who are apparently cured should be instructed to report for physical examination and spinal fluid test every two years and possibly oftener.

Diagnosis of Chronic Late Syphilitic Arthritides.—Hermann Schlesinger (*Wiener klinische Wochenschrift,* February 5, 1925) emphasizes the following points:

The diagnosis is readily made from an admitted infection, from previous remittances of symptoms after antisyphilitic treatment, or from a history of repeated miscarriages in the wife or the evidence of hereditary syphilis in the children. There may be definite gummatous changes in the skin or the mucous membranes, characteristic changes in the bones, gummatous diseases, late syphilids, or specific changes in sensory organs. The Wassermann reaction may be positive. However, the arthritic disease may be of a nonsyphilitic nature in a syphilitic patient. Unfortunately the history and the other findings may be negative.

Physical examination and observation often help in the diagnosis. The condition is frequently refractory to salicylate therapy and other antirheumatic measures. If the various tests with tuberculin and gonococcus vaccines result negatively, syphilis should be given consideration. Gout must also be eliminated.

A peculiar localization of the disease is characteristic, especially in the sternoclavicular joint; the joints of the jaw and the vertebral column may also be involved. Symmetrical lesions of joints, especially of the knee joint, have been known to occur in hereditary syphilis for a long time. Any joint may be involved. The order of frequency of joint involvement is the following: knee, ankle, elbow and the joints of the hand; the hip joint is involved least often. There is no traveling from one joint to another as in acute rheumatic infection, and the frequent recurrences are of a local nature and affect joints previously involved.

The pains are usually severe and generally show nocturnal exacerbations. The pains may last for months, being influenced by neither antirheumatic or antineuralgic remedies, but they respond promptly to specific remedies. Pain on motion is also generally present. The function is usually impaired considerably less than one would expect; fixation of the joint and severe articular muscular atrophy are rare. Circumscribed points of tenderness are usually demonstrable. These points of tenderness usually correspond with circumscribed anatomic changes.

The Wassermann reaction is often negative in the blood serum, but it may be positive in the articular punctate. It is usually more markedly positive in the joint fluid than in the blood serum. The luetin and precipitation reactions may also be negative in the blood serum, but positive in the joint fluid. The blood Wassermann, however, may become positive after antisyphilitic treatment.

The röntgenographic findings are usually not definite. The most important findings are the following: multiple, preferentially circular periostitides in the long tubular bones, the absence of an acute Sudeck bone atrophy, and focal disease of the articular cartilage with hypertrophic changes at the border of the joint space. Thickening of the joint capsule, partial destruction of the ligaments, rarefying osteitides, and possibly circumscribed destructions of bone may be of diagnostic value. Restriction of the involvement to one joint, the neighboring joints remaining intact, is quite characteristic.

The heart and large bloodvessels are strikingly seldom attacked. In these cases the spirochetes seem to have a predilection for the connective tissue and locomotor system.

The pharmacological reaction is of the greatest diagnostic value. This term refers to typical reactions after the administration of specific drugs. A moderate amount of blue ointment is applied to a painful joint. This application results in either an immediate marked remission of the pain or the remission may be preceded by a marked aggravation of the pain. The transient aggravation may be looked upon as a Herxheimer reaction. Specific remedies administered in the form of subcutaneous or intravenous injections of mercury, iodid, arsphenamin, or bismuth produce typical reactions. These may be either of a general nature, focal reactions in markedly changed joints, or in apparently unaffected joints and bones. 1. The general reactions are inconstant; there may be a febrile reaction, sometimes associated with beginning chills or profuse sweating, after a few hours. 2. The focal reactions in the affected joints are usually pronounced. The pains are increased, the articular swelling may increase, the skin over them is reddened, sometimes edematous and feels warm. 3. Focal reactions in apparently unaffected joints do not last long. Most frequently there is tenderness over the sternoclavicular joint, the sternum and the calvarium. The author considers the pharmacological reaction as one of the most constant and important signs of late syphilitic arthritis.

The treatment should be both general and local, including also the measures that are known to affect the joint condition favorably.

DIABETES

Diabetes. Surgical Infections and Insulin.—R. Carrasco-Formiguera (*Lancet,* May 23, 1925) summarizes his personal experience in cases of surgical infection in diabetic patients and of their treatment by insulin as follows:

1. Even in the more severe cases of infection in diabetic patients it is always possible (unless there is not enough time before the patient dies) to attain a normal blood sugar level if insulin be used in large enough doses properly spaced throughout the day.

2. It may be difficult, or even impossible, to keep the blood sugar level absolutely normal all the time through, but it may be kept so most of the time and not far from normal the rest of the time.

3. Such a result may be obtained without any dangerous underfeeding, which must be carefully avoided. In fact, with an adequate combination of diet and insulin such patients may be kept sugar free and at the same time well nourished, much better than would be possible by any other known measures, dietetic or otherwise.

4. In many cases infection in a diabetic patient may follow a favorable course even when there is a certain degree of glycosuria or hyperglycemia, but in other instances it may be very different.

5. So long as given case of infection in a diabetic patient, in which glycosuria or even only hyperglycemia persists, is not doing well, all efforts must be made to render the urine sugar free or even to attain a normal blood sugar level with the help of insulin and avoiding undue underfeeding.

Glycosuria, the Symptom.—Walter R. Campbell (*Lancet,* March 14, 1925) states that resembling, as these cases of symptomatic glycosuria do, the less severe cases of diabetes in many particulars, it is of considerable importance to the patient's future that they should be accurately differentiated from true diabetes mellitus, since their prognosis is good and is not in any way improved by dietary restrictions. However, until sufficient evidence has been accumulated to justify freeing these patients from the diabetic regimen, they should be treated as diabetics.

Certain characteristics are common to this group, which help to separate it from diabetes mellitus. First, they are symptomless apart from glycosuria unless, perchance, they have previously undergone an excessively rigid dietetic regime, resulting in weakness and emaciation; second, they are usually discovered accidentally during routine physical examination; third, the glucose percentage and total excretion of glucose in twenty-four hours is small; fourth, the glucose is unaccompanied by acetone bodies unless there are other causes for their presence, such as pregnancy or starvation; fifth, increased carbohydrate intake does not produce a commensurate increase in the glycosuria; sixth, the respiratory quotients after glucose ingestion rise to values around 1, indicating the normal utilization of carbohydrate; seventh, the condition shows no tendency to progress even under dietary conditions highly unfavorable to the true diabetic. Probably the most significant differentiating point, however, is the fact that in such cases glycosuria can be repeatedly shown to be present while the blood taken at the same time shows a normal sugar content.

It has been shown that diabetes is due preeminently to a failure of the islet tissue of the pancreas to function normally. Carbohydrate metabolism is thereby impaired, hyperglycemia results, and glycosuria occurs when the blood sugar reaches an excessively high level. Treatment for the condition is not to be directed to abolition of the glycosuria, though this is an incident when treatment is successful, but to the provision of adequate rest to the pancreas from overwork, the maintenance of a normal blood sugar level, and, at the same time, provision of sufficient calories to restore to the individual the ability to do physical work.

The necessity of carefully differentiating glucose from other reducing substances in the urine is emphasized, and when glucose is actually present the importance of distinguishing between the accidents and anomalies of carbohydrate metabolism and the disease diabetes mellitus must be appreciated.

Local Insulin Reactions.—R. D. Lawrence (*Lancet,* May 30, 1925) states that besides its general action on blood sugar and carbohydrate metabolism, insulin causes definite local effects and reactions at the site of injection. These reactions vary with the individual, the site of injection, and the brand and batch of insulin used.

The local reactions may be conveniently divided into immediate and delayed. In all cases it is the hypodermic injection of insulin that is described and not the intradermic or intramuscular. Intradermic injections meet with great resistance, cause an obvious pigskin appearance, and much local irritation, swelling and pain, and should always be avoided. Intramuscular injections cause no obvious swelling but a deepseated pain which lasts from twelve to thirty-six hours. Patients should keep their syringes in methylated spirit or absolute alcohol, and never sterilize them by boiling or strong antiseptics.

The immediate local effect of an injection of insulin is stinging at the site of the injection. This is most marked during the first few days of treatment and is rarely troublesome after ten days. The tissues seem to acquire a local tolerance to insulin and stinging is likely to recur when the injections are made in some other part of the body. Local urticarial wheals occasionally appear, often when the injection is partly intradermic. It is anaphylactic in nature.

Delayed local reactions are much more troublesome. They closely resemble vaccine reactions and are more likely to occur in the obese. They may cause much pain and irritation and can be partly alleviated by cooling lotions. They usually disappear after two or three weeks. General anaphylactic reactions have also been reported.

Subcutaneous thickenings and great thoughness of the skin following frequent injections in any one part of the body may be prevented by changing the site of the injection from one arm or thigh to another or to the chest or abdomen every week or ten days. Usually a change of the batch or brand of the insulin is the cause of the trouble.

The pain of the puncture can be minimized by the use of fine and sharp needles, and by inserting the needle as nearly at right angles to the skin as possible. Usually, by moving the point of the needle lightly over the skin it is easy to find a spot which is quite insensitive to the prick and where the injection can be made quite painlessly, because it avoids the nerve endings for pain. The sting of the insulin is usually very slight and it can be made less by pinching somewhat vigorously the skin and underlying tissues into which it is being injected. The best sites for injection are the parts of the body where the skin is loosest and which are not subject to pressure or too much movement in the underlying muscles. The calves are unsuitable because the skin is very tight over them, and the best places for self-administration of insulin are the front and outer aspects of the thighs, the abdomen, and the lower part of the chest. The forearms and outer sides of the upper arms are also available when someone other than the patient is giving the injection.

OBSTETRICS

Effect of Popular Gynecological Procedures on the Future Childbearing of Women.—John Osborn Polak (*Canadian Medical Association Journal,* September, 1924) says that too many women are operated upon, many needlessly. Sterility operations give poor results and often have unfortunate sequelæ. The gynecological patient seldom has a complete diagnosis before operation is advised. When possible operations on childbearing women should be deferred; better obstetrics, better postpartum care and the use of pessaries will keep these women comfortable. Every abdominal operation has its morbidity, is followed by some intrapelvic pathology and a small mortality. Greater care should be used before determinng on Cæsarean section.

Cæsarean Section After Labor Test.—H. M. Armitage (*Surgery, Gynecology and Obstetrics,* October, 1925), asserts that the low operation is indicated when the membranes are ruptured and examinations by the vagina or attempts at delivery have been made.

When the low Cæsarean is decided upon the uterus should be eventrated, the abdominal wall closed, and precautions taken to prevent infection of the peritoneal cavity by "spill," gloves, or instruments. With the uterus eventrated the operation is performed with remarkable ease. Thus its applicability is extended to included the field of the general surgeon by whom most Cæsarean sections are performed.

The slight increase in shock caused by lifting the uterus out of the abdominal cavity is more than compensated for by the effectual protection afforded to the peritoneum.

Placental Transmission. The Aminoacids, Nonprotein Nitrogen, Urea, and Uric Acid in Fetal and Maternal Whole Blood, Plasma, and Corpuscles.—E. D. Plass with the assistance of C. W. Matthew (*Bulletin of the Johns Hopkins Hospital,* June, 1925) analyzed the fetal and maternal whole blood and plasma from twenty normal patients at the term of delivery for aminoacids, total nonprotein nitrogen, urea and uric acid. The aminoacids were found to be uniformly higher in normal fetal whole blood and plasma than in the maternal. The total nonprotein nitrogen was likewise always in higher concentration in the fetal whole blood and plasma. Urea was usually equal in concentrations in the two bloods. Uric acid was usually found in equal concentrations in the two circulations, but, if there is a difference, it is generally higher in the fetal blood.

Value of the Wassermann and Sachs-Georgi Reactions in Obstetrics.—Karl Burger and Ludwig Heiner (*Zentralblatt für Gynäkologie,* March 22, 1924) arrive at the following conclusions:

1. During the puerperium (especially after the first eight days) the Wassermann reaction is more reliable, inasmuch as the Zachs-Georgi reaction frequently gives nonspecific reactions, as was shown by the authors' investigations during pregnancy and six to eight weeks after delivery.
2. Blood from the umbilical veins and retroplacental blood give no reliable results.
3. The duration of the labor and the albuminuria of pregnancy have no effect upon the serological reactions.

The contraindications include an active process in the more healthy lung, intestinal tuberculosis, severe cardiac and renal disease, advanced age, and also very extensive pleuritis adhesions on the better side.

Hemorrhoids in Pregnancy.—C. Rosser (*American Journal of Surgery,* March, 1925) designates the following situations as those suggesting or requiring surgical intervention: The presence at the outset of gestation of hemorrhoids, certain to prove annoying when aggravated by continuation of pregnancy. Complications, such as excessive bleeding, ulceration or gangrene. Thrombosed external piles, where removal of the clot and redundant skin under local anesthesia will correct an otherwise annoying situation. The modern technic for hemorrhoidectomy, embracing local anesthesia, absence of traumatic divulsion of the sphincters to cause bladder disturbance, and the excision and ligation of the piles, permits bowel function in forty-eight hours when necessary and can be performed without fear of interruption of pregnancy.

Uterine Myomata and Pregnancy.—P. B. Bland (*Surgery, Gynecology and Obstetrics,* March, 1925) asserts that the simple presence of a myoma in the uterine wall is no indication for treatment. Even myomata in such a position ostensibly as to act as a barrier to parturition may rise out of the pelvis and permit of fetal exit. Unless the tumor excites acute symptoms, irrespective of its position, it should not be disturbed, but treated along simple expectant lines.

Tumors occupying persistently an obstructive position in the pelvis, provided they are agreeable to the patient, we believe, do not call for treatment until near term, when an elective Cæsarean operation may be performed and the tumor removed either by conservative myomectomy, depending upon the size of the tumor and the wishes of the patient, or a hysteromyomectomy depending again upon the wishes of the patient and the exigencies of the case. With regard to therapy in those cases associated with necrosis and acute symptoms, one can safely say that this will depend upon the extent of the necrotic process and severity of the symptoms.

Management of Occipitoposterior Position.—S. J. Scadron (*Surgery, Gynecology and Obstetrics,* May, 1925) advocates Kjelland forceps for transverse and oblique positions of the head, and for biparietal application. In this opinion they possess the following advantages over the ordinary forceps:

1. They are easy to apply in spite of the position of the head, and the direction of the sagittal sutures; no special experience in technic is required.

2. The position of the head is not altered by the application. This is an important fact, especially when there is slight pelvic contraction, in which case the ordinary forceps displace the head defeating nature's attempt.

3. It is necessary to introduce only two fingers instead of the whole hand as is sometimes necessary when the head is high up. This reduces the chances of infection.

4. The biparietal application does not permit the slipping of forceps. The point of the blades remains on the face near the chin and the blades run parallel with the long axis of the ovoid head and firmly grasp the head. The traction on the face is not only directed against the points but there is an even pressure of the entire instrument. There is no direct pressure over the eye, no pressure on the face, neck or facial nerve as with ordinary forceps.

5. Better rotation is obtained because the forceps can be applied in one position.

6. This application aids the normal mechanism in terminating labor.

7. Less force is required.

TUBERCULOSIS

Articular Surfaces in Tuberculous Arthritis.—D. B. Phemister (*Journal of Bone and Joint Surgery,* October, 1925) in studying the changes in articular surfaces in this disease, finds that in the earlier stages of tuberculous arthritis, in joints with both free and contacted articular surfaces, the articular cartilage is usually destroyed most extensively along its free articular surfaces by granulations which overgrow it from the surrounding synovial membrane. In the regions of contact and pressure of articular surfaces, surface destruction by granulations does not take place and the cartilage is preserved longest. As the disease progresses, subchondral granulations develop which absorb articular cortex and attack the cartilage from beneath. In severe tuberculous arthritis there may be early necrosis and caseation of the overgrowing synovial granulations, so that there is little or no destruction of articular cartilage along its free surfaces. In this event the destruction of articular cartilage is brought about mainly by the subchondral granulations, which do not undergo early necrosis and caseation and do not present the usual histologic picture of tuberculous tissue. The bony involvement along the articular surface may be either primary or secondary. When primary, the dead bone may break down, leaving a cavity, or may persist and form a sequestrum which has articular cortex and in some instances cartilage preserved on it and is denser than the surrounding living bone which subsequently atrophies. Secondary involvement of bone along the articular surfaces may lead either to destruction of the entire articular cortex by superficial caries or to more or less extensive and deep areas of necrosis at the points of greatest pressure in the joint. This deep invasion is often bilateral and is followed by the formation of "kissing sequestra," which may be mistaken for primary foci of osseous infection.

Intestinal Tuberculosis.—A. N. Bessessen, Jr. (*American Journal of Surgery,* September, 1924) finds that early diagnosis is necessary if results are to be expected. Rest is the basis of all methods of treatment. Under proper supervision, in favorable cases, either medical or surgical treatment will give good results. The pulmonary condition and the resistance of the patient is the index of prognosis. Properly selected cases should have the benefit of surgery.

Pathogenesis of Skeletal Tuberculosis.—A. Kolodny (*Journal of Bone and Joint Surgery,* January, 1925) notes that the parallelism between the frequency with which certain skeletal regions are involved in tuberculosis and the abundance of their blood supply supports greatly the embolic theory of the pathogenesis of bone tuberculosis. The vascularization of the costal cartilages proves that tuberculous foci in these regions are often of primary and not secondary nature. The anatomical, as well as clinical facts, are in perfect accord with the embolic theory. They speak against the criticism of this theory and against the suggested substitute theories.

Renal Tuberculosis.—M. Persson (*Annals of Surgery,* October, 1925) finds from a survey of cases that the frequency of this complication in men is almost twice that in women. Hereditary tendency can be traced in twenty-five per cent. of the cases. Almost two thirds of the cases are patients in the third or fourth decades of their lives. The cases of localization to the right kidney exceed those of the left. The extent and grade of the bladder tuberculosis seems to have exercised a considerable influence on the final result of the operated cases. In slight ulcerations of the bladder, the late mortality has been almost three times greater than when such have been absent; in extensive ulcerations, the mortality has been extremely great. According to the postexamination of nonoperated patients, unilateral cases have shown a mortality which is but little less than in the whole of the examined nonoperated material, of which certainly almost half, and probably more, have been bilateral cases.

It has been impossible to demonstrate spontaneous healing of tuberculosis of the kidney in a single case. Postexamination of cases treated by nephrotomy and kidney resection exhibit no favorable result. Bad results are also shown after nephrectomy in bilateral cases. The total operative mortality in nephrectomy for unilateral renal tuberculosis amounts to 7.3 per cent.

The best possible operation wound healing appears to have been secured by ligation of the ureter and burning it off by thermocautery below the kidney pelvis, and allowing the stump to drop back, and, fianllay, primary suture of the wound. Abscess formation has occurred in only two of sixty-four cases treated in this way, all of which were followed for a long time after operation. Equally good healing has been obtained, however, in four cases where, after infection of the wound from the abscess contents, a little draining tube has been inserted for the next day or two after the operation. Women, otherwise healthy, who have been nephrectomized for renal tuberculosis, can go through pregnancy and parturition just as well as normal women.

But, on the other hand, if the remaining kidney is affected by a chronic nephritis, pregnancy can lead to exacerbation of the disease.

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Medicolegal Notes.

BLOOD POISONING FOLLOWING INJURY TO FINGER

The Pennsylvania Superior Court holds, Felker v. American Chain Co., 84 Pa. Superior Ct. 437, that an award under the Workmen's Compensation Act was properly made where the evidence showed that the deceased had rubbed or scratched his finger during the hours of his employment, that the employment was such that a scratch or puncture of the finger might occur and that he subsequently died of blood poisoning caused by the infected wound. Testimony of a doctor that in his opinion deceased died as a result of septicemia following the injury to his finger was held sufficient to support the finding that he was hurt in the course of his employment.

SECONDARY EVIDENCE AS TO X RAY EXAMINATION

In an action for personal injuries, the Missouri Court of Appeals says, Spellmeyer v. Theo. Hiertz Metal Co., 272 S. W. 1068, that there is room for the position that the interpretation of x ray plates by an expert is the best evidence, and not the plates themselves, since x ray plates must be interpreted and explained by an expert. But, assuming that the x ray plates themselves are the best evidence, where it was established that these were lost and that a diligent search was made for them without finding them, it was held that the trial court properly permitted a physician to testify and state as to his knowledge of the plaintiff's injuries by which he was aided through an examination of the plates, since it is largely within the discretion of the trial court as to when secondary evidence should be admitted.

EMPLOYER'S LIABILITY TO PHYSICIAN

The Oklahoma Supreme Court holds, Farley v. H. T. Milling Co., 239 Pac. 451, that under the provisions of the Workmen's Compensation Law an employer becomes liable for medical fees for an injured employee in one of two ways: First, by contract, either express or implied, with the physician; second, by the physician treating the injured employee when called under the emergency caused by the employer's failure to provide medical aid. In the former case the employer is liable under his contract; in the latter the liability is imposed by law, and the charges must be approved by the State Industrial Commission as a part of the injured employee's compensation, but where the record discloses that no contract, either express or implied, was made for such services, the party rendering such services cannot recover upon contract, and where the record shows that the provisions of the Workmen's Compensation Law have not been complied with, he cannot recover by virtue thereof.

ORDINANCE GIVING CERTAIN PHYSICIANS RIGHT OF WAY HELD UNREASONABLE

The Maryland Court of Appeals holds, Kidd v. Chissell, 126 Atl. 82, that an ordinance which gives physicians with police permits the right of way at street intersections without providing for any means of identifying physicians' vehicles is not a reasonable traffic regulation authorized by 4 Code Pub. Gen. Laws, art. 56, §133.

INGUINAL HERNIA RESULTING FROM STRAIN

The Minnesota Supreme Court holds, Klika v. Independent School Dist. No. 79, 202 N. W. 30, that an inguinal hernia, the development of which is caused by overexertion or strain, is an "accidental injury" within the Workmen's Compensation Act and is compensable. It is held unimportant in the administration of the law whether from a medical or scientific standpoint hernia is classed as a disease or a malformation or is otherwise designated; nor is it important that the employee is predisposed thereto. The law concerns itself only with the legal cause.

QUALIFICATION TO TESTIFY AS TO CONDITION X RAYED

The New Jersey Court of Errors and Appeals holds, Casey v. Atlantic City & S. R. Co., 126 Atl. 293, that it was proper to permit a witness who had qualified as a physician and an x ray specialist to answer a question whether the condition of the plaintiff's injured wrist was such as he would have expected from the condition which he x rayed. He had testified to an external examination of the injury, to having made an x ray of the injured parts, and was being asked to compare the conditions as he found them from both examinations.

FALSE STATEMENTS AS TO MEDICAL CONSULTATIONS

The Minnesota Supreme Court holds, Shaughnessy v. New York Life Ins. Co., 203 N. W. 600, that it is the duty of an applicant for life insurance to give truthful answers to questions relative to medical consultations and treatment. Such matters are material to the risk, and, if the answers are false, the policy may be avoided; but the rule does not require the disclosure of consultations or treatment for slight or temporary ailments. Information possessed by an agent to solicit insurance is not attributable to the insurer, unless the information was imported to the agent in the course of his agency. Answers to questions concerning previous or existing ailments, consultations, and attendance by physicians, and the like, are held beyond the scope of the functions of an agent whose only authority is to solicit insurance. Under the evidence, it was held that there was no room for the application of the rule that, when the applicant correctly states facts to the insurer's agent, who misstates them in the application, the insurer cannot shift the responsibility for the misconduct of its agent.

DAMAGES

The Kentucky Court of Appeals holds, Louisville & I. K. Co. v. Whitesides, 270 S. W. 19, that damages of $2,000 for an atrophied shoulder and forearm, the condition of which would grow worse, were not excessive.

The Texas Court of Civil Appeals holds, San Antonio Public Service Co. v. Alexander, 270 S. W. 199, that a verdict of $21,250 to a skilled mechanic, earning over $300 a month and with a life expectancy of thirty to thirty-five years, for permanent paralysis depriving him of the use of his legs and bladder and destroying his earning capacity, was not excessive.

The Missouri Supreme Court holds, Mattice v. Terminal R. R. Assn., 270, that $25,000 to a fifty year old plaintiff, whose earning capacity had been reduced from $200 to $60 a month by injury to his hand and wrist, destroying the mobility of the wrist and depriving him of the power to grasp anything with his right hand, was excessive in the sum of $10,500.

The Arkansas Supreme Court holds, St. Louis-San Francisco Ry. Co. v. Murphy, 270 S. W. 956, that $12,000 to a brakeman earning $1,500 a year for injuries requiring amputation of three toes, resulting in permanent loss of the use of the foot and injury to the spine, which would probably develop into tuberculosis, was not excessive.

The Minnesota Supreme Court holds, Iverson v. Regola, 202 N. W. 27, that a verdict of $3,000 for injuries to the nervous system as the result of an automobile accident, unaccompanied by any organic injury, was not so excessive as to constitute reversible error.

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Cancer—Its Causes and Control

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I welcome the invitation to write an account of my cancer researches for American readers the more as some of the most valuable of recent investigations have been carried out in American laboratories.

For some years I have been urging that cancer is a parasitic disease and that in the transformation of a normal into a cancerous cell there are concerned, a, the factor that prepares the cell for the action of the parasite and b, the parasite and that only when these two factors are conjoined is cancer possible. I believe that we are within measurable distance of an understanding of the second factor, the cancer parasite. We are still very far, however, from a clear conception of the first factor, the factor that makes for the precancerous cell. As I see it this factor constitutes the major part of the cancer problem and only with a dissipation of the mystery that surrounds it can we hope to arrive at enlightened methods of prevention and cure.

THE CANCER PARASITE

As I have shown in my previous papers (1), published from 1921 onwards, there can be obtained from all classes of cancer, primary, metastatic and transplantable, a microorganism of complex characters. This complexity makes its study a problem of extreme elusiveness and I have suggested that in this fact is to be found the chief reason why the bacteriological investigation of cancer in the past has led to so much divergence of result.

The actual parasitic phase consists of a very minute element living in invisible manner in the cancerous tissue, but in suitable media the microbe emerges from the cell and can then be seen to grow into visible shape. At first it appears as elements which, under the highest powers of the microscope, are just on the verge of visibility. From these there are rapidly formed in the test tube phases of the life story which range in size up to comparatively large microscopic elements. The primitive phase of the parasite consists of a material that is curiously resistant to ordinary stains and often shows up against the dark background in stained films made from an early primary culture as a bright, sometimes refractile, substance. This "cancer plasm" appears usually as globules varying in size from forms just visible at X1000 magnification up to masses twenty micron or more in diameter. They can often be found at the end of twenty-four to thirty-six hours when a piece of cancer is incubated at 37° in any ordinary medium and they can be definitely seen to arise in relation to the cells of the tumor. On rarer occasions this plasm assumes the form of bright unstained rods or filaments and its derivation from the cancer cells can then be recognized in a way which is often very clear.

A study of these appearances thus convinced me that the visible forms of the parasite as seen in the culture medium are derived from an invisible form, probably of the plasm order, which in the fresh cell is locked up in an intimate and invisible manner within the cell substance.

The interpretation which I have put on the facts has been criticized on the grounds, firstly, that globule and rod are merely products of cell degeneration and, secondly, that these socalled plasm elements do not correspond to any form of living matter. The first criticism is met by the fact that similar appearances are not found during the incubation of control tissue and also by a study of the subsequent evolution of globule and rod which I shall refer to in the following paragraphs. The reply to the second objection is that plasm elements can be found in a fluid medium to increase progressively in numbers like any ordinary living body and, as rods, they can on occasion be grown on a solid medium where they produce colonies that develop in the ordinary way. Moreover, that the plasm rod and globule correspond to a living phase in bacterial life is supported by the striking investigations of Löhnis (2) and de Negri (3), who have described similar appearances in other bacteria.

The subsequent development of the plasm forms as this unfolds itself in an ordinary culture medium introduces a series of alternations in form which are extremely confusing and into the details of which I cannot enter in this paper. Briefly the plasm may pass over into a *bacterial* mode of life, in which it takes the form of very minute (Rickettsialike) bodies, of cocci or of bacilli or it may, under other and different conditions of environment, enter on a *fungal* career, when it grows as yeast forms or as branching hyphæ. In my previous papers I have shown that it is certain that some if not all of the various elements that arise from the primitive plasm matrix are capable of living each a true to type life, and that, on the other hand, under suitable conditions of cultivation, one form may be induced to pass over into

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another form. One of the most interesting and important discoveries made during these investigations was that some of the phases of the microbe correspond to the most familiar types of bacteria. The coccus, for example, is often indistinguishable from a staphylococcus and the bacillus from a coliform organism. The staining and biological reactions exhibit as wide variations as the morphological permutations.

It has sometimes been urged that my views are so opposed to the whole science of bacterial morphology that they must necessarily be based on fallacies of observation or interpretation. Time alone will decide this question. Meanwhile, I believe it is significant that throughout the world a large number of workers are coming to entertain views on general bacterial morphology similar to my own. One of the most outstanding of these bacteriologists is Löhnis (2) of Washington, whose brilliant pioneer efforts in these directions have not received the attention from bacteriologists which they merit. Mellon (4), Almquist (5), de Negri (3), Hort (6), Wade and Manalang (7), Reed and Orr (8), are some among the many other recent investigators whose researches have led to general conclusions that challenge the very foundations of orthodox bacteriology. The general result of all the recent work is to establish with complete certainty that many familiar organisms possess coccal, bacillary and fungal forms as alternative phases in their life story and that in each of these they can propagate themselves in a true to type manner. The extensive investigations of Löhnis and my own observations on the cancer parasite indicate that for the student the secret of bacteriological morphology is to be found in the primitive bacterial matrix—the symplasm of Löhnis or, as I prefer to call it, the bacterioplasm. The discovery of this phase in bacterial life must be considered to mark a new and important stage in the development of the science of bacteriology. The fact, moreover, that in this bacterioplasm we have to deal with a plastic substance in which, as in the germ plasm of higher life forms, we have enchained all the evolutionary possibilities of the race, introduces a new and fascinating subject for the student of evolutionary problems. Meanwhile we can see in it an explanation of many of the striking observations of older workers which were often swept aside by serious investigators as implying nothing but a sort of freak phenomenon. Into this category would fall, for instance, the findings of Henri (9), who isolated from the Bacillus anthracis coccal, yeast and branching threads (1914).

The importance of a new conception in science may be gauged by the degree with which by its aid we can advance to the conquest of fresh fields as also by the way in which, by its means, we can push out into prophecy. For a considerable time I have been struck by the fact that in other types of infective diseases, notably typhus, smallpox and influenza, the confusion and divergence of result associated with their bacteriological study in the hands of different careful workers has exhibited features resembling the confusion that has attended the gropings of bacteriology in cancer. Already my prophecy in respect to typhus would seem to be fulfilled for Weigl (10), Breinl (11), and Fejgin (12), claim to have derived from the Rickettsia of typhus the Bacillus proteus (X19) which has a special relation to this disease.

About the same time as I was carrying on my early investigations in Edinburgh, Glover was arriving by an independent research at analogous results in Toronto. His observations, which have more recently been carried on in New York, ended finally in his describing a microorganism which he was able to obtain from all classes of cancer and which in its essential features is identical with mine. Since then Loudon and McCormack (13) and Scott (14) have confirmed his findings. Within the life story of the Glover microbe, coccal, bacillary, fungal and filtrable elements are found. Moreover, as in my experiments, malignant tumors have been produced in lower animals by the artificial injection of the microbe.

To those who are conscious of the recent tendencies it must be apparent that bacteriology is on the eve of a big awakening, the full importance of which it is impossible to overestimate. One of the most significant of these developments concerns the filtrable viruses. Here again the new morphology has important lessons to teach, for the frequency with which a filtrable form is being discovered as an alternation in the life story of familiar bacteria is of deep significance. Of interest in this connection are the investigations on the Bacillus tuberculosis of Valtis (15), Vannucci (16), Arloing and Dufourt (17), and Durand and Charchanski (18); on the Bacillus typhosus of Hort (7), Almquist (6), and others and on the Bacillus anthracis by Heymans (19). The work of Löhnis suggests that all bacteria may live alternatively in an 'amorphous' and filtrable phase.

The complex character of the cancer parasite, each alternative phase of which is capable of following an independent true to type existence, makes necessary a review of the whole literature on the bacteriology of cancer. For, as I have elsewhere suggested, it is likely that different workers have sometimes been dealing with separate fragments of this complex whole. Such I believe the filtrable forms of Nuzum (20) in 1921 and Gye (21) in 1925 will probably prove to be, as also the bacilli of Ford Robertson (22) (1921) and Blumenthal (23) (1924). Blumenthal has suggested that the bacillus which he has isolated from different types of cancer is not the real infective agent but that this consists of an invisible virus which the bacillus carries. In view of what I have said it would seem likely that the ultramicroscopic virus which Blumenthal finds it necessary to predicate is in reality the parasitic phase of the bacillus and that bacillus and virus are alternative phases of the complex cancer parasite, which I first described in 1921.

The interpretation which I have just given of the divergence in the findings of different workers is in keeping with the morphological study of the cancer parasite and it is supported by the fact that each observer with his own organism has succeeded in producing malignant growths experimentally in lower animals. The results of Glover, Blumenthal and myself are specially striking in this respect.

THE PRECANCEROUS FACTORS

Between the problems of cancer and tuberculosis, as I conceive them, there are striking resemblances. In tuberculosis there is, as the immediate factor, the infecting bacillus, a microbe of wide dispersal in nature. But in tuberculization there are the equally

essential factors that prepare the tissues for infection. Among these we have come to recognize environment (housing, exposure to special forms of ill health, irritation) and heredity. In cancer I believe the problem is essentially of the same order. The cancer parasite, as I have shown, belongs to bacterial types diffusely spread in nature. It is probably even more widely scattered than the tubercle bacillus and it is commonly present on the surfaces of the skin and bowel. An understanding of this fact disposes of one of the greatest objections to the parasitic nature of cancer. It explains how, in the presence of susceptible tissue, the determining cellular infection is easy. So widespread, indeed, must the microbe be that it would sometimes seem that it may almost be disregarded from a mathematical calculation of risks; hence we can explain the hundred per cent. cancers which are sometimes obtained by the experimental tar painting of the mouse's skin. It may, thus, be rightly urged that for the genesis of cancer the "soil" is paramount. For this reason the value of much of the work carried out in the past in disregard of the parasitic causation of cancer is untouched by the discovery of the cancer parasite.

The factor that determines cell susceptibility, namely, the condition of the cell which enables it after infection to embark on the riotous proliferation which cancer connotes is, as I have elsewhere shown, usually a complex of different factors. Some of these are intrinsic and precedent and from the basic cell *anlage* or mosaic on which, as it were, extrinsic and subsequent factors operate. Of the intrinsic ingredients of the cell mosaic, one of the most common is the cellular change induced by *age*. The significance of this factor is well known and I need not refer further to it. Another possible intrinsic constituent of the precancerous cell is *heredity* to which Maud Slye's (24) extensive studies have recently directed attention. A further intrinsic element in the cell, namely an *embryonic or primitive power of continued proliferation,* was recognized long ago as an important factor in cancer as the teachings of Virchow and Cohnheim show. It may be that there are points in common or links or real identity between these varying properties.

The accumulated results of numerous clinical and laboratory observations have established with a certainty that is apparently complete that for practical purposes the dominating factor in the production of the precancerous cell is an extrinsic one, namely, *localized chronic irritation.* Its sinister operations are seen in all classes of cancer where the cancerogenic agencies are observable, e. g., skin, buccal cavity, alimentary tract and uterus, which between them comprise the bulk of human cancer. During recent years it has been established that the cell change is not dependent on the class of irritation; practically any type of local damaging influence may suffice if long continued, e. g., mechanical (sharp tooth), thermal (lip cancer, Kangri cancer), chemical (arsenic, acids, alkalis, paraffin, tar, soot, anilin dyes), chronic infection. For practical purposes the problem has thus gradually shaped itself for the student of cancer into a consideration of chronic sore places produced in the human body by a multitude of irritant agencies. It is obvious that in any community the cancer rate must occur and increase in a ratio determined by the number and the increase of such sore places in the people of that community. When thus formulated, the practical problem becomes disentangled from the theories which have encumbered it and it assumes for us a study in community health which is correspondingly simplified.

ESSENTIAL IDENTITY OF CELL CHANGES PRODUCED BY CHRONIC IRRITATION AND THE EMBRYONIC CELL ANLAGE

In previous papers I have pointed to the evidence indicating that the cancerogenic activity of chronic irritation depends upon the fact that by its means stable and differentiated cells are transformed into cells with the primitive properties necessary before continuous proliferation is possible. In this view, while the riotous subdivision which the cells subsequently exhibit is determined by the intracellular parasite, the precedent persisting damage sets the stage, as it were, for the operation of this parasite. It is obvious that if this conception can be established, it reconciles much of the conflict of ideas which has characterized previous cancer hypotheses by showing that in the ultimate the state produced by chronic irritation and the embryonic *anlage* of the cell are closely related. In its support there are two precise facts. In the first place the regions where chronic irritation acts prominently as a cancerogenic agency are just those regions which are normally covered by a resting differentiated epithelium. In the second place those regions where cancer typically occurs without the apparent operation of chronic irritation are those consisting of cells that are normally primitive, e. g., chorionepithelium. In parasitic plant tumors the same considerations apply for the parasite produces a tumor only when it infects the primitive areas or growing points of the plant. In this connection, crowngall, in which the causal parasite is the Bacillus tumefaciens of Erwin Smith, and warty disease of potatoes due to the synchytrium endobioticum, form interesting studies.

LEUCEMIA AND CANCER

A further proof of the role of cell primitiveness in malignancy is seen in the results of the experimental injection of the cancer virus into *healthy* animals. These results I (1c) have recorded fully elsewhere. Under such circumstances, as we would expect, carcinoma is rarely produced. Out of 270 mice injected, I obtained a local malignant tumor in only five cases. In a large number of the remainder (about thirty per cent.) I obtained, however, a widespread proliferation of the *primitive* cells normally present in the healthy animal. The tissue so affected is the lymphoid tissue of the liver, spleen, lymph glands, bowel, lungs, marrow, etc. In many cases large masses of tumor cells with multiple mitoses are found and there is the frequent occurrence of infiltration of the surrounding structures. In the mild cases the histological picture is that of lymphomatosis or pseudoleucemia, in a marked case of lymphosarcoma. The lesion is undoubtedly due to a diffuse spread of the injected organism and its nature indicates that, whereas the epithelial structures are ordinarily immune (though even here marked proliferative changes are occasionally noted, e. g., in liver), the primitive cells are capable of being stirred to a malign prolifer-

ation. This experimental lesion I first described in 1921. In 1922 Maud Slye (24) described experiments in which she found that in specially reared cancerous stocks of mice, carcinoma, sarcoma or, as an alternative, pseudoeucemia or lymphosarcoma developed spontaneously. She therefore concluded that the latter lesion was a variant of malignancy. My views have received further support by the recent work of Nuzum (20), who found that the repeated administration of the microbe, which he obtains with considerable constancy from human carcinoma, produces in mice a diffuse lymphoid tumor (liver, spleen, lungs, kidney).

These experimental results confirm the view long entertained by many pathologists that the leucemia lesion is essentially neoplastic and must be looked upon as a sarcomatosis. My experimental results led to the study of human leucemia, with the result that in 1922 I succeeded in isolating from the leucocytes in this disease a microbe essentially similar to that isolable from the cancer cell.

NATURE OF THE CHIEF IRRITATIVE FACTORS UNDERLYING HUMAN CANCER

Among all the phenomena associated with the incidence of human cancer there are two that stand out dominatingly. In the first place, the disease is comparatively rare among primitive peoples. In regard to this question there has been much controversy but I believe that the evidence is now overwhelming. It is clear that races that live close to nature are not protected by any special racial peculiarities for when brought into contact with civilization they are found to be prone to the disease. Thus, while the negro races in Africa are practically immune from carcinoma, in the United States there is little difference in the disease incidence of the white and black populations. The same is true of the Eastern races.

In the second place, among civilized races the toll which cancer exacts is enormous and it is increasing with rapid strides, in several countries the death rate in proportion to the living population having doubled in forty years. In England and Wales, according to a Ministry of Health Circular (26), after making allowance for the ageing of the population, the mortality increased from 841 per million in 1901 to 1007 in 1921, or by twenty per cent. In 1923 there were 48,668 deaths from cancer in England and Wales. In the Continental United States the increase was from 47,829 in 1900 to 80,938 in 1922, or per million living from 629 to 868. The difficulties surrounding satisfactory registration in the United States make the general figures somewhat unreliable. In some of the older states, however, this criticism is less applicable and for Massachusetts, for example, the increase per million was from 712 in 1900 to 1166 in 1922. There are considerable differences in the cancer death rates in different countries. One of the most interesting in this respect is Italy, for among large continental countries this stands out as one where the death rate is comparatively low and exhibits little tendency to increase. Thus per million the figures are 680 for 1918 against 650 for 1908. That these figures correspond to some racial habits worthy of close study is demonstrated by the fact that similarly low figures are found in Italian colonies. Thus, as Hoffman (26) has shown in a recent paper, in New York City the Italian rate was only 60 per 100,000 against rates for persons of native origin of 93, of English origin 100, of German origin 115 and of Irish origin 125. Again, in the state of Pennsylvania the native rate was 74 against an Italian rate of only 58. These rates are strictly comparable as they have been adjusted for age and sex. Without drawing any conclusions, Hoffman points to the interesting fact that other investigators have shown that amongst the large European countries the meat consumption in Italy is smallest and the vegetable consumption highest *per capita*.

I have pointed out that human cancer largely resolves itself into a study of chronic "sore places" produced by local irritation. In this view the immunity of the native must depend on a method of life that carries with it a freedom from those factors which in civilized regions promote local irritative lesions. When we approach the question from this viewpoint, which has behind it the sanction of a generation of precise clinical and laboratory research, we are able to formulate the problem in a way that leads to comparatively simple issues. It is sometimes urged that primitive races are protected by some general immunity which is derived from their ways of life and feeding. Although precise data still remain to be gathered more liberally in this field of observation, there is evidence against this view as is shown by a study of such local cancers as those produced by the Kangri basket and betel chewing. Neve (27) of Kashmir, out of 598 cases of cancer amongst the natives, saw only three cases of alimentary cancer and 363 or, if epitheliomata of groin and axilla are included as presumably of the same origin, 451 cases of Kangri burn cancer of the skin. Rentall (28), out of 1482 cases of cancer in Travancore, where the site is mentioned, found 1205 in the mouth, jaw, lip or tongue as the result of betel chewing and only twenty-five cancers in the alimentary tract from the esophagus downwards. These two striking records constitute, as it were, clinical experiments which prove that while irritation is able to provoke cancer in such peoples the irritation is dominatingly external and not alimentary and that, as it were, the circumstances in them are the reverse of those obtaining in civilized races. The facts point with an insistence which is impelling to the alimentary habits of the native as an explanation of his low internal cancer rate. This view is supported still further by the observation of McCarrison and others that, in districts where cancer is rare, appendicitis, colitis and other dyspepsias are also rare.

As I have shown the evidence in favor of a determining local cause in the vast majority of cancers is overwhelming and any hypothesis which refuses to recognize this fact is doomed to failure. At the same time, in the present state of our knowledge we cannot exclude the possibility that in the background there may be other predisposing factors of a general or systemic nature. I have already pointed to the existence of such intrinsic and generalized influences as those implied by age, heredity, etc. There may be others both intrinsic and extrinsic of which as yet we have no clear knowledge. Recently it has been suggested that the high cancer rate among civilized peoples as contrasted with that of primitive races may be dependent on dietetic errors in the former associ-

ated with an impoverished vitamine intake, whereas among the latter this is avoided by the ingestion of large quantities of fresh food. It is impossible to pronounce any definite opinion on this view, which has recently been strongly urged by Ellis Barker (29), until we have acquired more precise data. Meanwhile it may be pointed out, however, that such data as those relating to the incidence of Kangri and betel cancer are apparently opposed to this explanation in so far as they emphasize the purely local viewpoint. The same arguments may be opposed to such views as that of Ross who attributes cancer to a defective potassium intake. At the same time it cannot be denied that there are some facts which can be more readily explained on the assumption that generalized factors of extrinsic origin as well as local factors may be present; for example, the way in which the incidence of increase so prominent during recent years tends to affect widely scattered organs and areas in the body. It is therefore important that with our attention focused on the local causes we must not shut our eyes to the possible and even probable operation of some generalized agencies which, in an increasing degree, are conspiring to make the peoples of civilized communities more liable than their predecessors to suffer from the damaging effects of tissue irritants.

Even after we have given to such considerations their full weight, however, we can be left with no doubt that the problem of immediate practical import is irritation and that this may be localized to one organ and in it provoke cancer when there is no evidence of altered vitality elsewhere in the body. The facts on which this conviction rests are at once a challenge and a hope for they point to a very precise field for observation in which every new discovery will bring us nearer to essential causes which are extrinsic and avoidable. Where the issues are clear, as in occupational cancers, e. g., in paraffin workers, mule skinners, etc., public health effort is comparatively easy. Despite the consideration that in the alimentary types, which comprise the bulk of human cancers, the causes are still elusive, the fact that they must begin as chronic sores due to long standing local damage, means surely that their origins are detectable if only we apply ourselves to the facts. I have shown that all the evidence indicates clearly that the absence of alimentary cancer in primitive races must be due to alimentary habits that are unassociated with local irritation of the mucous lining of the digestive tract and that, *per contra,* the large incidence of alimentary cancer in civilized communities must be due to alimentary conditions that provoke irritation. It is necessary to reiterate these simple facts for I believe that, more than anything else, a failure to grasp their significance has in the past militated against the development of the clear cut outlook necessary for a successful prevention. For with a recognition of these issues it becomes apparent that in the ultimate the most important of all the classes of human cancer can be traced to considerations of *diet.* If, as I believe is possible, we can establish this proposition there at once emerges a great fact that will give to the anticancer crusade a momentum of tremendous force. That anticancerous developments along these lines are well advised is strongly supported by the fact that the tragically rapid increase in all types of internal cancer among civilized peoples coincides with changes in their dietary which have called forth the repeated warnings and protests of those qualified to speak with authority. Many have pointed to the fact that this increase has coincided with a great augmentation in the consumption of canned food and of food doctored by preservatives and have suggested that there is some corelation. This is a line of inquiry worthy of consideration. We have to remember, also, that food irritants are probably as numerous and as varied as the multitude of irritants that can provoke external cancer. While it would be foolish to insist that civilized man in order to escape the menace which he is raising for himself must revert to the rough and crude dietary of his cancer free brother in the wilds of Africa or the barren plains of India, it is urgent that he recognize quickly that his disregard of the most important of all the things that make for physical well being is leading to disaster.

We can thus see emerging from the confusion of theories which has encompassed cancer a clear direction for preventive work. We cannot say that such and such a food irritant is specially responsible for cancer, but we can say with confidence that any food irritant whatsoever is suspect and we can with a certain conviction teach the people that by the practice of the well recognized principles of a simple dietary they can do much to avoid the most frequent kind of all human cancers. To have the greatest possible effect the observance of enlightened hygienic rules must commence in infancy for, as Arbuthnot Lane (30) and others have shown, bad alimentary habits started in early years may lead to permanent mechanical damage of the bowel, associated with bands and kinks and with a chronic intestinal stasis and irritation, that in later years not only cause cancer but determine the sites. I believe there is no more convincing testimony to the fundamental errors of our diet and the early age at which these commence to operate than the widespread dental caries of civilized communities. This stands forth as probably the most obvious monument to the hygienic ineptitude of the times.

CANCER CONTROL

I have already referred to the big opportunities we have for preventive work. We may look forward with confidence to an early eradication of occupational cancers. By preaching the gospel of a simple diet we know that we are getting to grips with the greatest menace of all, namely, alimentary cancer and, if Arbuthnot Lane's views are correct regarding the localized damage which circulating intestinal poisons can inflict on the breast and other organs, the practice of sound dietetic and alimentary habits will strike widely at the spreading roots of the greatest canker of civilized times.

Cancers in other sites can be prevented by attention to the corresponding local irritations, in the case of buccal cancer by the avoidance of sores from smoking, jagging teeth, badly fitting dentures or oral sepsis; in the case of uterine cancer by the avoidance or treatment of cervical lacerations, and so on.

Pending the discovery of a strictly scientific cure of the disease we can make more widely known to doctor and public alike the very considerable chances there exist of a complete cure by surgical means and the fact that these chances in some regions, lip,

tongue, breast, uterus, etc., rise to figures ranging from fifty to one hundred per cent. when the disease is treated early. After all the cure of any disease is always a relative matter. There are few diseases where cure is certain and there is no grave disease where, as in cancer, a purely local origin allows of early and complete extirpation. Thus in early cases of cancer of the lip the Mayo Clinic (31) shows ninety per cent., and the Johns Hopkins Hospital (32) (Bloodgood) ninety-five per cent. five year cures. The statistics of the Johns Hopkins Hospital (33) extending over a period of twenty-five years show that in early cancer of the breast where there is no involvement of the axillary glands the cures are seventy per cent., and the same hospital (34) in early cases of tongue cancer shows a sixty-two per cent., five year cure. Similarly in early cancer of the cervix the five year cures may be as high as fifty per cent. (Bonney 35). Recently there have appeared a number of records which suggest that with radium very striking results may be obtained in cervical cancer. Thus Heyman (36) has published an account of 40.5 per cent. five year cures in operable and borderline cases, while at the Doederlein Clinic at Munich, in clearly operable cases, the five year cures were 48 per cent. and, in those who completed the radiation treatment, 80 per cent. (thirty-five out of forty-three) (39).

There is thus ample evidence to justify our carrying a message of hope to the public and we can emphasize this message in respect of accessible cancers, but at the same time it is our clear duty to make plain to them the early warning signals of the disease so that treatment can be established without delay. Much has been done in this way but much more remains to be done through the medium of the medical practitioner, the press and the platform. In the United States gratifying results have followed the propaganda of the American Society for the Control of Cancer and other agencies. In discussing this question Bloodgood states that the effect in bringing patients earlier for treatment is almost incredible. Thus at the same clinic in the decade 1890-1900 in breast cases there was usually the history of a long duration of the disease and eighty-five per cent. were cancerous, whereas during the years 1920-1922 when there was a lump it was cancerous in only fifty per cent. Even more striking was the fact that, while in the first period only one per cent. were able to be dismissed without operation, latterly fifty per cent. were so dismissed without operation, thus showing how alive the public had become to the need of early advice. In regard to tongue cancer, also, Bloodgood says that the educational propaganda has increased the number of operable cases at his clinic from fifty-three to eighty per cent. and decreased the number of hopeless and inoperable cases from forty-seven to twenty per cent.

The initiation of a cancer week in some centres with an accompanying intensive press campaign has succeeded beyond the hopes of the promoters. Thus Saltzstein (37) reports that in Detroit during four days 1100 people applied to eight hospitals for advice about sores, lumps, etc. and out of this number forty-two cancers were discovered clinically and seventy-five precancerous lesions. The cancers included the following regions: face, seven; lip, four; breast, sixteen; uterus, eight; etc. McCalla (38) of Idaho likewise reported that during National Cancer Week in seven small communities in Idaho 108 cases of early cancer were discovered. These results are heartening and they exhibit clearly how with a widening of the campaign and the recognition and treatment of precancerous lesions many can be saved from developing cancer and many thousands can be rescued even after they have fallen into its clutches. The education of the public along well planned lines, moreover, will remove much of the fatalistic attitude towards the disease which is often based upon the false belief that it is invariably incurable.

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Mouth Infections; Their Symptoms and Immediate and Remote Effects*

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A debit and credit philosophy is instinctive with most human beings. This attitude is reflected in most religions which hold forth an immortality or at least a life after death. Compensation for the sorrows and toils of this life will be found in the joys of a posthumous existence. Poverty, at least in our sentimental literature, has certain advantages over wealth. Brain power and muscle power in the same individual sometimes rather conspicuously stand in inverse relation to each other. The invalid occasionally finds a peace which her aggressive, robust brother misses. The acuteness of the senses of hearing and touch are proverbial in the blind. Instances of this nature can be multiplied *ad libitum*.

Somewhat over a hundred years ago this viewpoint came into biology as the *loi de balancement*. Goethe and the elder Geoffrey St. Hilaire independently had noticed that at times marked structural specialization along one line appeared to be secured at the expense of other parts. A gain was balanced by a loss.

Now, in modern biology not too much stress is layed on this *loi de balancement*. Darwin (1) admitted there appeared to be some evidence for it but it must be applied with restraint and discrimination. At any rate it seems to serve admirably to introduce our subject upon a broad background of general biology.

The moet distinguishing peculiarity of man is his extreme cerebral development. The disproportionate growth of the cerebral hemispheres has required a commensurate growth of the cranial part of the skull. This has been accompanied (perhaps compensated for) by certain changes of an atrophic or degenerative or retrogressive character in the facial part of the skull. Among these changes are a shortening of the body of the mandible and lessened room for the eruption of the teeth. There is also paleontological evidence that man's teeth are falling into the category of superfluous and useless organs and it is common experience that such organs are more liable to ills than organs important for the survival of the species. Organs, retrogressively rudimentary and relatively unnecessary for the life of the individual, are not kept toeing the mark by the action of the struggle for existence and the elimination of the unfit. Perhaps the toothlessness of senility, immortalized by Shakespeare (2), will turn out to be a prophecy fulfilled in the old age of the race.

In addition to these evolutionary handicaps, man's mental development has indirectly worked further harm to his dental heritage. We have all heard of unfortunate individuals who had champagne tastes and beer pocketbooks. This discrepancy is no greater than that which habitually exists between the gastronomic proclivities of civilized man and what his body really needs in the way of food. It is unnecessary on this occasion to particularize, but we can admit that the dietary habits of the vast majority of civilized men are not suitable to the capabilities and needs of the human body.

In brief, to outline my argument so far: As a result of evolutionary processes leading to man's cerebral specialization man's teeth are in various and for the most part still obscure ways faultily developed. This same cerebral specialization has rendered man's survival relatively independent of his teeth, which consequently become liable to the vicissitudes of rudimentary organs. Again, this cerebral specialization by influencing man's dietary habits has affected the body's metabolism to the disadvantage of the teeth.

If the viewpoint developed in the preceding paragraphs be correct, then to the eyes of the pure biologist or evolutionist the work of the dentist is futile. He is kicking against the pricks. If fortunately from your own experience you knew nothing about it, you could infer from what I have said that disease in the mouth is not uncommon. It seems as if from a number of circumstances the cards were stacked or the dice loaded against the health of the teeth and their adjacent parts. If I left you here you might well be pessimistic. But as a dentist I must try to justify my professional existence. We, both you and I, are (as Roosevelt once wrote) practical men, and must give ear to the expediencies of the moment. The detached or abstract attitude of the pure biologist or evolutionist, however useful, is nevertheless an artificial, formal attitude. The problem of the moment, of the present generation and its children and grandchildren, is really more urgently important to us than the ultimate fate of the human race. An ever present problem is that of disease, and it would be illogical and shortsighted to ignore disease in the mouth.

There are three infections or infectious conditions to which I wish to direct your attention: periapical infection (i.e., infection around the end of the root of a tooth), periodontal disease (commonly termed pyorrhea alveolaris) and Vincent's stomatitis or trench mouth.

Periapical infection almost invariably is a sequel to the decay of teeth. Enamel and dentin have been destroyed, the pulp killed and the bacteria following this path have reached the periapical tissues. At this stage the patient may or may not experience more or less local pain or tenderness. The tooth may to the patient appear longer than its neighbors. Or the patient may have no inconvenience. The electrical and thermal conductivity of such a tooth is lowered. Examination of the affected part with the röntgen ray may, except in acute cases, show evidence of the absorption of lime salts from the involved periapical region. Röntgen ray examination is, all things considered, the most practicable way available as yet to obtain an insight into the periapical condition of a suspected tooth. There are however certain limitations. In the first place the negatives must be in-

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terpreted by a man with large special experience, thoroughly familiar with the normal forms and relations of the parts involved. In the second place it must be remembered that the röntgen ray never can reveal the presence or absence of infection. It can only show the presence or absence of bone absorption. If we find röntgenographic evidence of periapical bone absorption, we usually infer the presence of infection, but the fact should be kept in mind that periapical bone absorption can be occasioned by purely mechanical strains and stresses.

The symptoms of periodontal disease (pyorrhea alveolaris) are soft, swollen, bleeding gums, the formation of pockets around the roots of the teeth, the flow of pus from these pockets, the denudation of the roots of the teeth leading at times to an unpleasant sensitiveness toward extremes of temperatures or certain foods, the loosening of the teeth occasioning more or less pain on chewing, and disagreeable or offensive breath odors, whose antinuptial properties are well known to all students of popular advertising.

The symptoms of Vincent's stomatitis or trench mouth are purplish red, swollen, easily bleeding gums on which may be a thin, easily removable grayish membrane or large, shallow irregular ulcers. The gums are ordinarily exquisitely painful and the odor of the breath is peculiarly sickening and offensive. Vincent's stomatitis is usually an acute condition, while the majority and most significant of the periapical and periodontal infections referred to above, are or become chronic.

The immediate effects, in both the spatial and temporal senses of the word "immediate," are rather trivial in comparison with the remote effects. Periapical infection often causes no immediate inconvenience. Mastication may be slightly interfered with.

In the case of periodontal disease the patient may experience considerable local trouble from the pain and difficulty of chewing and from the sensitivity of the denuded roots. If the disease be allowed to progress and also too often in spite of treatment, the teeth become so loose as to drop out of themselves or to be pulled out by the patient with his fingers.

In well marked, acute cases of Vincent's infection the gums are often so sensitive that no mastication of food can be done. Even the involuntary or unconscious movements of the lips and tongue are most painful. At times, if allowed to progress, the alveolar process in spots may be exposed by the destruction of its overlying mucosa and the teeth may drop out.

From your point of view I believe the remote effects of these infections to be most interesting. Of focal infection I shall say little because it is not, at least in medical and dental literature, a neglected subject. For sake of completeness I need only remind you that periodontal and particularly periapical infections have been held responsible for a great variety of pathological conditions, e.g., some cases of secondary anemias, arthritis, myositis, endocarditis, gastric and duodenal ulcer, cholecystitis, appendicitis, iritis, neuritis, neurasthenia and some psychoses (3).

The evidence that oral infection may act as a focus from which bacteria and their products are distributed through the body, may be summarized as follows:

1. The same bacteria which are found at the focus have in some instances, been recovered from the remote lesions. The streptococci almost exclusively are of significance in focal infection as understood here.

2. The bacteria isolated from the focus when injected into susceptible animals will sometimes bring about a condition in the animals similar to that seen in the patient.

3. The elimination of infection at the primary focus is in some instances followed by amelioration or cure of the secondary condition. The failure of improvement in such a circumstance does not definitively weigh against the doctrine of focal infection. If bacteria have successfully colonized at the site of the secondary lesion, e.g., in a heart valve, their removal from the primary portal may prove unavailing.

4. The administration of autogenous vaccins prepared from bacteria isolated at the primary focus, may call forth symptoms at the sites of "secondary" localization, e.g., in a point.

5. When the primary focus is subjected to surgical trauma, as in dental extractions, there sometimes occurs an exacerbation of the "secondary" condition.

In speaking of oral infectious foci, it should be kept in mind that chronic infection elsewhere in the body, as e.g., in the tonsils, the postpharyngeal lymphoid masses, the nasal sinuses, the middle ear, the gallbladder and vermiform appendix, the colon, the prostate and the tubes—may bring about identical results. We have no data which will permit us to draw a reliable conclusion as to the relative importance of these several infectious foci. Probably current general medical opinion gives first place to tonsillar infection. To maintain a sane perspective the Latin motto on our commonest coin should be applied to the mouth as an infectious focus—*e pluribus unum.*

Only one more remark about oral focal infection in the narrow sense of this phrase—many, in fact most, individuals from early middle age on, harbor chronic infection in their mouths through many years apparently without suffering any harm. I wish to stress the word apparently, with the mental reservation that "appearances are sometimes deceiving."

The significance of Adami's (4) conception of subinfection has not been sufficiently appreciated in this connection. The tissues of the body in health are potentially sterile not invariably actually sterile. Even though bacteria be entering the body they are being destroyed at least as rapidly as they enter. If with recurrent invasion the tissues become worn out, chronic or acute infection may supervene. Other things being equal, it is conceivable that the more bacteria which enter in a given time, the more rapidly will the tissues be worn out. The bacteria which continuously or periodically invade the body from chronic periapical or periodontal infections or the toxic products which diffuse out from these foci may be destroyed—but their effects accumulating through years cannot but be harmful to the host. When for any reason the local resistance of an organ or part

or the general resistance be lowered, some of the bacteria entering from these foci may survive and serve to establish secondary localizations. The infectious foci in themselves acting as subinfections, tend to lower the resistance of the body and in this way a vicious circle is established.

I have deliberately condensed our consideration of oral focal infection to very narrow limits. The subject has been a popular one for some time and there is nothing materially new that could be brought you. There are other phases of oral infection which are not unimportant and which are less appreciated.

In pulmonary tuberculosis the establishment and maintenance of oral health will practically eliminate the tubercular localizations which at times occur on tongue, gums and buccal mucosa. The mechanism of their origin is simple, being just the implantation of tubercle bacilli from the suptum upon preexistant wounds. Pyorrhetic pockets constitute such wounds (5). Such cases are however very rare.

A much more important relation of oral infection to pulmonary tuberculosis arises from the inspiration of Vincent's organisms and the common pyogenic cocci from a diseased and neglected mouth. We have such opportunities offered in the common periodontal infections, in gingivitis, and in Vincent's stomatitis. Pyogenic infection secondarily implanted upon an already existent lesion of tuberculosis in the lung will facilitate cavity formation and the distressing and discouraging febrile complications. When the secondary invaders are the Vincent's organisms the result is the more serious, putrid and gangrenous processes, which often run a rapid and fatal course. From what I have said, it is not acting with the highest degree of intelligence to ignore the condition of the mouth if our aim is to permit the patient to mobilize all his defensive and recuperative resources against the tuberculous infection.

The oral manifestations of syphilis are classical and do not call for exposition here. There is only one point of which I wish to remind you in this connection. When mercury is used for treatment, it can be administered far more intensively when attention is given to the health of the mouth. Not so long ago the state of the mouth was the guide followed in this form of treatment. The physician would push the mercury until the patient's mouth became so sore he could stand it no longer. Then the mercury would be suspended until the mouth returned somewhat to normal, when mercury would be given again. This alternation could be repeated indefinitely at the option of the physician and the patience of the patient. It is a well established fact that appreciably larger doses of mercury can be given before mercurial stomatitis appears if the mouth be well cared for and kept in a healthy state.

An occasional recent report suggests that a somewhat analogous condition may occur even in the administration of the organic arsenicals (6).

In several respects the oral condition of the patient is of importance in general surgery. In the case of postoperative pneumonia many factors are operative, but the great predominance of type IV pneumococci (7)—the ordinary pneumococci of the mouth—supports the view that we are dealing with an aspirational form of pneumonia. Periodontal disease, gingivitis and stomatitis in proportion to their severity and extent furnish larger numbers of bacteria and under these conditions the aspiration of a minimum infective dose will be facilitated. In some hospitals it has been definitely found that the incidence of surgical pneumonia is lowered among those who have had their mouths freed from gross sepsis previous to general narcosis.

The similarity which exists between postoperative pneumonia and terminal pneumonia, suggests that the arrival of this latter condition may be postponed by cutting down oral infection to a minimum. The mouths of the aged or of those long bedridden often are in a deplorable state. Even though in the true sense of the word Osler's characterization is just—and terminal pneumonia often is "the old man's friend," still the irony of life is such that the patient himself and his relatives many times would welcome anything which delayed the arrival of such a friend.

In the case of postoperative parotitis the bulk of recent and current evidence (8) is in favor of regarding this serious and distressing complication as an infection ascending along Stenson's duct. Any surface oral infection, as pyorrhea alveolaris or stomatitis, will increase enormously the number of pathogenic bacteria which in this way can reach the parotid. With this in mind it is obvious that attention to the health of the mouth is indicated as a prophylactic measure. It seems a rational precaution to urge, not only against postoperative pneumonia and postoperative parotitis but as a measure based on general principles, that in all but emergency cases the mouth be put in a state of health as a routine procedure before major surgical operations.

Whatever be the cause and nature of gastric ulcer, it is certain that this lesion will be aggravated by being bathed with a suspension of pathogenic bacteria. Kopeloff (9) has shown that the bacterial content of the stomach is largely determined by the bacterial content of the saliva. Consequently the greater the infection in the mouth the greater will be the irritation offered to the gastric ulcer.

In all cases in which the gastric secretion is deficient in its hydrochloric acid content or in which an absolute achlorhydria exists, it is particularly desirable to cut down oral infection to a minimum. This is to avoid intestinal infection. It has been repeatedly shown (10) that the germicidal value of the gastric juice is essentially a function of its hydrochloric acid content. It has been pointed out by Hurst (11) that oral sepsis and achlorhydria are constantly associated with Addison's anemia and subacute combined degeneration of the cord. Streptococci are found in the duodenum of such patients. Hurst is also of the opinion that achylia gastrica may predispose to appendicitis or cholecystitis by permitting the access into the intestinal lumen of large numbers of pyogenic bacteria. In this connection it is not amiss to note that some evidence (12) has been presented indicating that oral infection predisposes to cancer of the alimentary tract and associated parts and also, that neglected oral sepsis shortens the duration of life of patients affected with alimentary carcinoma.

It has long been recognized that diabetes mellitus predisposes to infection, particularly with the com-

mon pusproducing bacteria. The dentist has known this and when a case of pyorrhea alveolaris is unusually resistant to ordinary treatment the patient is sometimes found to be a diabetic. In this disease the power to form antibodies is reduced. The bactericidal properties of the blood in dogs were found by Sweet (13) to be definitely diminished after excision of the pancreas. Da Costa and Beardsley (14) in natural human cases found a subnormal opsonic index, which was particularly low in the more severe cases studied. Takimura (15) observed a marked depression of the phagocytic power of leucocytes at least toward the tubercle bacillus in the serous fluid of the thoracic and abdominal cavities of diabetic rabbits. Under these conditions it is obviously unwise to temporize with oral infection of any type.

Since the advent of insulin another relation between infection and diabetes has been discovered (16). A general and local bacterial infection is often the immediate cause of the onset of coma and in the presence of infection, insulin is much less effective in lowering the blood-sugar. The cases cited as illustrating these phenomena, so far as I am aware, are not cases of oral infection. Although I can see no reason why oral infection should be an exception, still it will be necessary and interesting to observe the influence of the elimination of oral sepsis on diabetes mellitus.

In conclusion I wish to follow in one particular the example of Cato the Censor. So impressed was he with the threat which Carthaginian prosperity offered to Roman dominance that he ended all his public addresses—no matter what the topic, whether prohibition or the income tax or the morality of hair bobbing—with one stereotyped phrase—*Delenda est Carthago,* Carthage must be destroyed. In my humble way when I am talking shop and whenever the opportunity offers, I like to wind up with some such saying as—Oral Infection Must Be Prevented. I am not altogether sure that this is really the anticlimax Cato would have thought it to be. After chronic periapical and periodontal infection has once been established the best that can be done is in the nature of a compromise, the making the best of a bad job. This is said not to encourage an attitude of fatalistic resignation but to urge the necessity of preventing mouth infection.

The author's references will appear in his reprints.

The Inheritance and the Medicolegal Application of the Blood Group

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(*Concluded from page* 300)

While black may be the absence of white, the presence of white in the germ plasm had to be an actuality before it ever occurred in the somatoplasm of the zygote. The presence and absence theory is reducible to an axiom which states, that only one object can occupy the same space. A character may be absent in the somatoplasm, but present in the germ plasm, and this presence and absence in the same individual gives a hybrid.

The evidence available is indicative of the union of agglutinogens and agglutinins in such a manner that neither is separable from its mate in the germ plasm, and that the determiner for each blood group is unchangeable in the germ plasm. If one of the doses for a group is replaced in the germ plasm, it is replaced as a whole and not for a segment of the group as it appears in the zygote. A study of three generations indicates this conception to be correct, and furnishes data which demonstrates the falsity of the assumptions that have heretofore been made concerning the origin of groups different from those of the parents.

The significance of considering each blood group as specific is illustrated in a study of the results from crosses of Group I (*ab*), and Group II (A*b*). If the hybrid stage of man were present all crosses of *ab* with A*b* should give offspring that are A*b* as the evident unit character, and *ab* as the dormant character, as the *ab* has been supposed to be recessive to the A*b*. A second mating from offspring of this cross in which the germ plasm would have the constitution of A*b ab* should result in the segregation of A*b* (pure Group II), Ab ab heterozygous Group II), and *ab* (pure Group I). What actually happens when a Group I is crossed with a Group II? The family of Keyne (8) may be used as an illustration, or the third and forty-seventh families of Ottenberg. The cross of Keyne's family resulted in four children in Group I, and one child in Group II, and comparable results are seen in both of Ottenberg's families. This is the very reverse from what is to be expected from the cross of dominant and recessive characters. The immediate segregation of the characters represented in the parents occurred in the families cited. Anyone at all familiar with the primary significance of Mendel's studies on hybridization would know that a portion of the four Group I children were heterozygous to Group II, and that unions of these Group I children with other Group I children resulting from a similar cross could legitimately have both Group I and Group II children. If such were not the case the blood group would not follow the first law of Mendel, namely, that the characters represented in the germ plasm and samatoplasm of the cross breed reappear in the offspring of the cross breed. I have found authentic families in which there was no possibility of mistake or illegitimacy in which unions of Group I resulted in children in groups other than Group I; in fact in different crosses Groups II, III, and IV have appeared, and the ancestry in each case made such an occurrence possible and reasonable. The mere finding of such

families is to demonstrate the constant nature of each blood group and the transmission of the unit factor for each blood group between generations by the germ plasm.

The family of Keyne's contains other illustrations of the expectations from crosses of the blood groups. The family, by the way, is not indicative of the same type of material as that in the Tink family of my observations. The only relationship between the family heads in Keyne's family is the union of a Group IV with a Group I person. This is not representative of the blood group pedigree of a single family, but is representative of two families that have intermingled at one radical. Regardless of this deficiency, the family contains an excellent illustration of the value of a three generation study, where only a portion of the possible results are given. The cross of Group II (A*b*) with Group IV (AB) furnishes the data. The Group IV contains theoretically both dominant characters, while Group II contains theoretically one dominant and one recessive character. Regardless of this, the offspring from the cross, if the first filial generation were present, would all consist of individuals in the same blood group, providing the parents were homozygous. The cross resulted in one child in Group II, and two in Group IV. If the blood group follows the Mendelian laws the constitution of the offspring are pure Group II, pure Group IV, and heterozygous Group IV/II. The next generation consists of a cross of a Group IV person with a Group III person. There was one child in Group III, and three in Group II. This is just what is to be expected from a character following the law for the segregation of characters. The Group IV was heterozygous, and no facts are presented to prove the heterozygous or homozygous nature of the Group III parent. On account of the rarity of Group III, it is particularly difficult to secure a cross of pure strains of Group III although Ottenberg reported one satisfactory family in 1908 (9). The cross of the Group IV with Group III is still further proof that the hypothesis of Ottenberg that the study need only be carried into two generations is incorrect. On account of the specific nature of all hereditary characters, there is no possible source by which the agglutinin *b* of the Group II individuals could have been introduced into the result of this cross when there was no agglutinin *b* in either of the two parents, unless its determiner was present in the germ plasm. A review of the preceding generation, however, shows the source of the agglutinin *b* was really in the A*b* of a grandparent, and demonstrates that the Group IV parent was a heterozygote with a germ plasm constitution of AB (IV)/A*b* (II). Of course, if the claim is made that the agglutinins are not inherited, but may occur at random, the situation is changed. Ottenberg says that what really is inherited is the presence or absence of the several agglutinogens; that this presence is "dominant" and this absence "recessive" as defined by Mendel. In the cross of Group I and Group II the absence of the agglutinogens certainly behaved as a dominant character, at least the numerical supremacy of the supposed dominant character is not demonstrated. There is no hybrid to show which side of the character appeared during the first filial generation. Ottenberg shows the above to hold true in his third and forty-seventh families. An analysis of the data presented by Ottenberg from crosses of individuals containing dominant and recessive characters shows that the agglutinogens do not behave as dominant characters. In the groups in which agglutinogens and agglutinins occur they exist in a state of genetic equality and are transmitted as inseparable entities between generations.

The relationship of agglutinins and agglutinogens in the groups in which both occur, is shown by available data to be comparable to the relationship of the petals and sepals of a plant. Petals and sepals have different functions but they are biologically, in the same plant, inseparable. The laboratory experiments conducted to show agglutinins and agglutinogens as independent units are comparable to pulling either the sepals or petals from a flower. If the reproductive organs of the flower are left intact, future offspring from the plant will have the same number of sepals and petals in exactly the same relationship as those of the parent, or present a presence or absence of either sepals or petals according to the fundamental structure of the plant. The test tube experiments on the blood groups in no way demonstrate the nature of germ plasm determiners for the blood groups. The laboratory data do not indicate the breeding possibilities of parents in the different groups.

Hereditary characters are constants, and the determiners for the characters are constants. The determiners are not changeable in the germ plasm, but exist there purely in a state of association. Immediately upon crossing mixed individuals the characters introduced reappear. Available data in the various fields of studies in heredity justify the conclusion that agglutinogens and agglutinins present in the parents are not rearranged in the germ plasm to give a blood group in the offspring different from ones in the parents. Crosses of Group IV and Group I do not give Group II and III offspring because the A, B, and *a, b* are twisted about to give the groups mentioned. If such were the case crosses of Group IV and Group I would always give this result. Crosses of Group IV and Group I only have Group II and Group III children, when they are heterozygous for these groups. A review of more than two generations is necessary to dispel the mystery.

Although the specific agglutinins of Groups II (*b*) and III (*a*) may be the two radicals that unite to give Group I, they have in the union in Group I properties not possessed by either of the agglutinins when existing separately. There are numerous similar situations in chemistry, and although two elements combine a third substance is actually formed. The same applies to the agglutinogens. For this reason I feel that the conclusion of Moss that there are three agglutinins and three agglutinogens remains uncontradicted.

If the constitution of the various blood groups is recognized as specific, namely, Group I, *ab;* Group II, A*b*; Group III, B*a*; and Group IV, AB, and the blood group conceded to depend upon a specific determiner for each blood group that is unchangeable and unalterable in the germ plasm, the letters may be used in the combinations given to fulfill all of the genetic possibilities in conformity with the two laws of Mendel, as well as the laboratory experiments conducted to prove the existence of agglutinins and agglutinogens. These letters are purely symbols for

I, II, III, and IV, so that it makes little difference whether they or the numbers for each group are used. The concrete entities for which they stand have not been visualized. The germ plasm is considered in all instances to contain two doses for each character. The germ plasm constitution of each individual pure for the blood group is *ab/ab*, (I); A*b*/A*b*, (II); B*a*/B*a*, (III); and AB/AB, (IV).

MAN IS NOT DIHYBRID

The suggestion has been made that "Man, in relation to the isoagglutinogens and isoagglutinins is a dihybrid." A few simple illustrations show clearly that man is not always hybrid for these substances. If Group III individuals be taken as an illustration of the supposed dihybrid status of man, a study of the result of crosses of Groups III and III will clear up the situation. Crosses of Group III, if it is considered a dihybrid, would be comparable to crossing hybrids of the first filial generation of plants and animals. The result would be twenty-five per cent. homozygous individuals from the dominant character, giving a group (B) for which there is no terminology at this time; fifty per cent. of dihybrid Group III (B*a*); and twenty-five per cent. which would possess another group made up of the recessive character (*a*) of the dihybrid. There is no group to constitute the recessive character (*a*). If the formula B*a* is used to indicate Group III in the germ plasm, it would always be expressed as B*a*B*a*, unless the individual in Group III is heterozygous and then one half of the germ plasm for blood group will be taken up by the determiner for the group for which the individual is heterozygous. A quarter of the germ plasm for a group is not split off in the germ plasm and replaced by a quarter from another group to give the group of the zygote. One half of the germ plasm has always been considered replaced by the second germ plasm property.

Hybrid matings always give the same result, and the perpetuation of hybrids exclusively by mating hybrids is the antithesis of Mendelism. No one has ever stopped to ask if agglutinin *a* is recessive to agglutinogen A and *b* is recessive to B, what the genetic relationship of *a* is to B, *b* to A, *a* to b, and A to B. The law for segregation answers these questions; and demonstrates that there is a fixed relationship between the specific substances. An analysis of the constitution of either Group I or Group IV gives conclusive data.

1. *ab/ab*×*ab/ab* equals *a/a*+2 *ab/ab*+b/b.
2. AB/AB×AB/AB equals AA+2 AB/AB+B/B.

Both crosses would give groups that have never been observed. The analysis of crosses of Groups II and III respectively show that there is no character relationship of *a* to B and *b* to A.

An analysis that applies to Group III, applies equally as well to Group II, as it is supposed to consist of a dominant and recessive character. Unless the factors for unit characters are represented in the germ plasm of parents they never appear in the offspring.

The agglutinins are not mere pawns but represent as distinct qualities of the serum as the agglutinogens do of the red cells. Group I, Group II, Group III, and Group IV may be crossed with their respective group, and all the children that result from the cross be in the same group as the parents. Such families definitely disprove for all times the dihybrid suggestion.

RELATIONSHIP OF BLOOD GROUPS IN GERM PLASM

The determiners for the blood groups, so far as information is available, behave in the germ plasm as allelomorphic characters behave in the hybrid state of plants and animals. Therefore, it is possible for the germ plasm of a parent to transmit not only a character present in the blood stream, but also another character or blood group that is represented by a determiner in the germ plasm. In other words from any cross of two individuals in different groups, it is possible for the children to be in any or all of the four blood groups provided the germ plasm contains determiners for different dormant groups, but if dormant groups are the same, only three different groups can occur. Crosses of parents in the same blood group can never have legitimate children in more than three different groups. Legitimate children with agglutinogens can result from parents without agglutinogens in the blood stream and, furthermore, children with agglutinins can be born legitimately to parents without agglutinins in the blood stream. All the evidence proves that agglutinogens are not dominant to the agglutinins. If the agglutinins were recessive to the agglutinogens, all persons in Groups II and III would be hybrid for these two elements. It would be impossible ever to find two persons crossed in Groups II or III bearing several children all in the same group. The segregating function of the germ plasm would prohibit such an event.

Impurity of the germ plasm in man is arrived at by the same means as in all animals, plants, and fowls, namely, by the association in the germ plasm in parental crosses of unlike characters.

The significance of the crossing of alternate characters was expressed by Bateson (10): "Now since the fertilized ovum or zygote, formed by the original cross, was made by the union of two germ cells or gametes bearing respectively tallness and dwarfness, both these elements entered into the composition of the original Fl (first filial generation) zygote; but if the germ cells which that zygote eventually forms are bearers of either tallness or dwarfness, there must be at some stage in the process of germ formation a separation of the two characters, or rather of the ultimate factors which cause those characters to be developed in the plants. This phenomenon, the dissociation of characters from each other in the course of the formation of the germs, we speak of as segregation, and the characters which segregate from each other are described as allelomorphic, i. e., alternative to each other in the constitution of the gametes." The quotation represents the essence of Mendelism and precludes the possibility of man being anything like a dihybrid for the agglutinins and agglutinogens of his blood stream. If such were the case cross breeding would result immediately in the segregation of the characters which entered into the formation of the dihybrid character, giving homozygous types, as well as heterozygous types. If that statement does not hold, the whole philosophy of heredity is wrong.

THE VALUE OF BREEDING PATTERNS

The patterns that have been presented in order to explain the blood group have been copied from the portion of textbooks on heredity that deals with the transmission of compound characters, and not with crosses of simple allelomorphic characters, and from cases where recessiveness and dominance were known. Furthermore, they represent the possible results of crossing of two hybrids with germ plasms that are similarly constituted.

The cross of a simple pair of allelomorphic characters requires but four squares to represent all of the possible zygote combinations. All of the data available make me believe that the blood groups behave in the germ plasm as allelomorphic characters. If the blood groups are represented by the symbols, ab, Ab, Ba, and AB, a pattern which will explain all of the phenomena which have been observed in the study of the blood by myself and others will be included in Table I. The patterns heretofore presented have been arranged to comply with data available and not in accordance with the fixed rules for making such patterns.

The prime difficulty in studying the results of crosses of heterozygotes in man is the necessity of marrying sister and brother heterozygotes, which is nearly impossible because of our social customs. The difficulty is further enhanced by the essential of proving the sister and brother heterozygous before attempting the experiment. The study is not simple. The homozygotes in each instance in the squares are designated by the subletter X, and the heterozygotes occupy all of the other squares. There are four homozygotes, or each blood group may exist as a pure type. There are twelve heterozygotes. The blood group present in the blood stream of each individual resulting from possible crosses of the gametes is represented in the lower right corner of each square, while the additional gametogenic function of the germ plasm of the individual is represented in the upper left hand corner of each square. Previous investigators have not recognized the reversibility of the evident and dormant blood groups in the heterozygote.

An analysis of Table I shows that the gametes for male and female each contain a determiner for a group, and upon union of the gametes unknown factors control which of the two determiners shall appear as a character in the blood stream of the zygote, and which will constitute the second character that is represented in the germ plasm. If the two gametes have the same constitution a homozygote will result and this individual when crossed with another like homozygote can only transmit one blood group to the offspring. If crossed with a homozygote of another group the groups of both parents will appear in the offspring. If, however, the gametes differ a heterozygote results, and if this zygote is crossed with either a homozygote or a heterozygote, and sufficient children result, the constitution of the germ plasm of the parents will be revealed by both the dormant and evident characters of the parents appearing among the offspring. The possibility of two parents in different groups bearing children in all four groups is shown in Table I and the possibility of parents in different groups having children in only three different groups is evident. The impossibility of two parents in the same group ever bearing legitimately children in more than three different groups, is pointed out in Table I. Of these three groups one must be the same as that of the parents.

MEDICOLEGAL APPLICATION OF BLOOD GROUP

The medicolegal application of the blood group is extremely limited; difficult of application, and would be, if used, frequently surrounded with danger of leading to the miscarriage of justice.

The only rule that can be formulated at this time for the use of the blood group in medicolegal affairs is that two parents in the same group can have children in only three different groups, and of these groups one must be the same as the parents. If a dispute in a family arose in which the parents were both in the same group, and they had four or more children, and the child in question happened to be in a different group from either parent, and all four of the blood groups were represented in the family, the child could be suspected of illegitimacy, but a great burden would rest upon the jury of deciding whether the mother had been caught in the first offence or whether the child in question was legitimate and another of the children illegitimate. If it could be positively proved that the child at stake was really illegitimate, how could its real father be positively proved? The parentage could not be proved by simply grouping the blood of the child and the "visiting gentleman." He might be in a different group from the child, and yet be its father. It would be necessary to prove that there was a possibility of the man being heterozygous, which would call for the grouping of his sisters and brothers, if he had any, his father and mother and his grandparents. If the man came from a small family there would be no way of proving him either homozygous or heterozygous. Even if the blood group coincided, there would still remain the possibility that another person in the same or a different group from the child was really responsible for the child.

SUMMARY

1. The blood groups are hereditary, and transmitted between generations as they appear in the blood stream. The group as a whole is the hereditary character.

2. The agglutinogens and agglutinins are neither recessive nor dominant.

3. The blood group is practically valueless for determining parentage in a medicolegal dispute.

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Etiology and Treatment of Enuresis

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No more accurate summing up of the subject of enuresis has been made than that by Davison in Abt's *System of Pediatrics,* where he says: "Much has been written but little relatively known of this condition which distresses mothers, shames children and baffles physicians." In the first place enuresis is not a disease but is only a symptom that may be caused by many conditions of widely divergent pathology and much that has been written that seems to be almost contradictory is absolutely correct for the different authors are describing different cases with entirely different causation. Let us first consider briefly some facts about the anatomy and enervation of the bladder. Elliott has recently brought out the interesting fact that the trigone muscle is not truly bladder muscle at all, but is a continuation of the muscular walls of the ureters.

ANATOMY AND ENERVATION OF BLADDER

This trigone muscle derives its nerve supply entirely from the sympathetic nerves and it opens and closes the bladder outlet; it has also been learned that there is no internal sphincter of the bladder in man, that the socalled sphincter is derived from two muscular loops, one from the circular and the other from the longitudinal coats of the bladder wall.

It is not definitely known just where sensation or the desire to urinate originates, the bladder mucosa except around the neck is not sensative. The bladder nerves seem to have a selective action, stimulation of the sacral nerves has been found to relax the bladder when it is contracted and to contract the bladder when it is at rest. Animal experimentation does not get us far because different animals have widely different urinary enervations and urinary habits and man alone is hedged in by conventions which interfere with natural impulses or instincts as to his urinary functions. Amberg quotes the experiments of Weitz and Goetz who filled the bladder with fluid under pressure and when they reached the point where the subject expressed a desire to urinate clamped the inlet tube and opened the outlet tube that was connected with a manometer. They found that in normal individuals the desire to urinate was expressed at a fairly regular pressure, while with those suffering from enuresis this desire was not expressed. Amberg, however, was unable to verify this by his own experimentation for he found that in some of his own cases of enuresis the patients expressed the desire and some did not.

The infant acquires bladder control at a variable period from six to thirty-six months, according to training and the veracity of the mother. Some mothers tell you that they have their children trained to use the vessel from six months, another not till thirty-six months, but whenever this control is acquired urination ceases to be an involuntary act and becomes voluntary. By what paths the desire to urinate is carried to the brain and from the brain back to the bladder is not known. Here is an opportunity for some real work.

Most children, except in cretins, congenital myxodemas, mongols and other types of idiocy, acquire bladder control and for some unknown cause lose it and the enuresis is developed after a variable period of more or less absolute control.

A DISCUSSION OF CAUSES

There is no clear cut idea as to the etiology of this condition; I will enumerate some of the causes as given by various authors:

Pototzky.—Considers that it is practically always a nervous symptom, and he enumerates nervous hyperexcitability, psychopathy and defects of intelligence as the three grand divisions or headings under which he classifies practically all the causes and considers it as a symptom of some neurosis.

Pisek.—Says that it is often found in an active child who plays too hard, considers it a sign of neuromuscular fatigue. He also mentions physical causes as phimosis, adenoids, hyperacid urine, but states that the principal cause is lack of control of the sphincteric centres or higher cerebral centres and states that if voluntary control is obtained or inculcated over the lower centres the case is cured.

Moss.—Quotes Atwood as stating that the detrusor muscle in children is much thicker and stronger than in adults and the sphincter is comparatively weaker and advances the idea that in sleep, when the action of the will is lost, due to this disparity of muscular strength, the urine is forced involuntarily from the bladder. He enumerates among other possible causes phimosis, paraphimosis, epispadias, hypospadias, balanitis, adherent clitoris or foreskin, pinworms, adenoids, tonsils, renal and vesical calculi, pyelitis, masturbation, vaginitis, skin disease, tuberculosis of genitourinary tract, all neurotic and psychic conditions which might produce reflex contractions of the bladder wall. He speaks of idiopathic and functional disturbances which do not reveal any specific cause and endocrine disturbances.

Kerley.—Mentions faulty development, but states that in about ninety per cent. the cause is unexplained.

Abt.—Mentions acid urine, alkaline urine, malformation of bladder and urethra, epilepsy, spina bifida, spina bifida occulta, compression, myelitis, cerebral lesions, fistula and oxyuris.

Holt.—Enumerates continued infantile condition, anything increasing irritability of the spinal centre, anything interfering with cerebral control over the centre and anything increasing irritability of the terminal filaments of the bladder nerves.

Church and Peterson.—Speak of it as a partial somnambulism and as physiological stigmata of degeneration.

White and Martin.—Call it a functional disease of unknown cause.

Porter and Carter.—Give as the principal cause improper training and the establishment of a neurotic habit.

Feer.—Mentions faulty training, nocturnal epilepsy, juvenile hysterics, considers it as an evidence of hereditary stigmata of degenerative inferiority.

Crozer Griffith.—Discusses phimosis, preputial adhesions, adherent clitoris, vulvovaginitis, balanitis, renal calculus, rectal fissure, thread worms, adenoids, foreign bodies in the nose, vesical calculus, hyperacidity of urine, hyperalkalinity of the urine, malnutrition, anemia, chorea, epilepsy, headache, neurasthenia, hysteria, improper food or clothes, fright, excitement, thyroid insufficiency, fatigue, too heavy bed covers.

This discussion of causes could be carried on *ad infinitum* as every text consulted or every author reviewed brings out some new suggestion as to causation which emphasizes the fact that there is not at the present time any very definite idea as to cause or rather there is a general idea pervading the literature that anything that disturbs us either mentally or physically may give rise to this symptom.

TREATMENT

When we come to consider treatment the same rule holds, there are as many methods given as there are causes enumerated, each showing a fair percentage of cures but not reporting their failures. Zappert has collected a list of thirty drugs all highly recommended by their advocates. Among the drugs most authors mention belladonna, and pituitrin is also popular with many of them; some suggest the use of thyroid extract, then come ergot, strychnine and nux vomica; potassium citrate and other alkalies are suggested for acid urine; bromides and hyocyamus to quiet the nerves; calomel, codliver oil, and hypophosphites, iron and arsenic as tonics and curative measures.

We find suggestions to remove tonsils, adenoids, polyps and other nasal obstructions, pull teeth, circumcise. Passing of cold urethral sounds is recommended by some as almost a specific. Hygiene and general home treatment have many advocates; cold bathing and massage, waking up at night with sufficient frequency to keep the bladder empty and establishing a dry habit. The strengthening and education of the sphincter muscles by having the child when he goes to urinate, urinate a little and stop suddenly on command and practise this stop, start, stop, start, as long as the urine lasts and by practising this several times daily there is no doubt that these muscles can be both developed and educated to do their work. Faradism and static electricity have their advocates, the necessity of rest and keeping the child free from worries and excitement is suggested by many, education of the will and hypnotic suggestion; injection of saline solution under the skin in the perineal and pubic regions, distention of the bladder by hydrostatic pressure, elevating the foot of the bed, no fluids after 4 p. m., encouragement, rewards and punishment, stimulation of the sympathetic nerves by applying pressure to any points of tenderness along the spine.

The use of a calendar with red and gold stars is recommended, the child being instructed to affix a gold star for every dry night and a red one for every wet night. This together with rest, dry supper, no fluids after 4 p. m., waking at intervals is I might say the most universally accepted system at present.

We might go on and find other suggestions but this is sufficient to show that there is no uniformity of ideas as to treatment. This fact, however, stands out that belladonna and atropine are or seem to be the standby for all or nearly all. And yet what does belladonna do and how does it act—on unstriated muscles it is a cerebral excitant; a depressant to motor nerves. Hare says it is eliminated through the kidneys almost as rapidly as it is absorbed from the stomach. If it is a sedative to unstriated muscles, does it not tend to relax the unstriated muscle of the vesical sphincter and increase the incontinence? And if it is excreted almost as soon as it is absorbed from the stomach, what local effect on the terminal nerve filaments can we expect if we get the child up frequently to empty the bladder or if he empties it involuntarily in bed?

The report of Wile and Orgel deserves special comment as they have done the most thorough piece of work that has been done or at least that has been reported. They took a class of fifty and treated them with drugs, belladonna, pituitrin, and others, and another class of fifty and treated them without drugs, and their results showed thirty-eight per cent. cures in each class but as the class under drugless treatment was forty per cent. mentally defective eliminating these mental defectives they showed forty-three per cent. cured of those of normal mentality, while those treated with atropine alone showed only thirty-five per cent. cured, and treated with pituitrin alone fifty per cent. cured. Their method with the non-medical treatment was to talk with the child, get him to express a desire to break this habit, get his cooperation and encourage him that he could, instruct the mother not to scold or punish him and to have him keep a chart with the gold and red stars and by encouraging conversation on every visit to the clinic and encouragement at home they got their results.

CONCLUSION

The points on which all recent authors agree are these: No fluids after 4 p. m., a two to three hours' rest in the afternoon; empty the bladder before retiring and again before midnight according to the time the child is found wet; use a chart with gold stars for dry nights and red ones for wet nights; encourage the child and impress on him the fact that he can get well. Is it not just possible that since cures are reported with every method of treatment that as far as drugs are concerned their effect is more psychological than medicinal? The affixing of the gold stars stimulates the subconscious control over the higher centres to greater activity and strengthens the will and the more frequently this chart is looked at, especially after it has a fair percentage of gold stars, the more beneficial the effect, for it keeps before the mind the main objective. It stimulates the desire and promotes selfconfidence and we can any of us accomplish anything we set out to do if we will only keep the main objective before us and keep striving towards it. Aside from cases of congenital malformation, neoplasms, myelitis, spina bifida, and other conditions that are of course incurable, I believe the large percentage of these cases are simply a habit condition and that with sympathy, encouragement, the proper regime and care this habit can be broken.

A complete bibliography will be included in the author's reprints.

Diminishing Number of Doctors in the Rural Districts

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During the last few years articles have been published in medical journals and discussions have occurred in medical circles concerning the diminishing number of graduates from the regular medical schools who become country doctors and general practitioners.

To remedy this it has been suggested that the premedical requirements be reduced and the period of instruction in the medical schools be shortened. This plan would undoubtedly increase the number of medical graduates but graduates of an inferior quality. So much is granted. But the remedy fails in that it presupposes that these poorly trained medical graduates will migrate to the rural communities, or stay there after locating.

The underlying thought is that the best doctors live in the cities and only the best can survive there, while the bohunks in the rural districts do not know a good physician from a poor one, and that any kind of doctor can survive in such a place.

As a matter of fact, conditions are just the reverse. In large cities there is a group of physicians and surgeons of outstanding ability who gain their eminent position by hard and conscientious work. Then there is the group of younger men of the same type striving for a place in the sun by the same route. These two groups are a credit to the medical profession. But there is another group which varies in number according to the size of the city, the larger city having the greater number. This group is made up of poorly trained, lazy, ignorant and careless medical men, fakers, quacks, and charlatans. A city the size of New York is filled with such men practising the healing arts, reaping a good financial harvest.

Why can men of the last class thrive in a large city and why do they usually starve in rural districts? Simply because in a large city there is no one to check up on their mistakes; they and their work are lost in the crowd; the pitiless light of publicity does not shine upon their ignorance and their mistakes are buried. In large cities a gift of gab, polished manner, fine offices, the right location and a small amount of ability will carry a physician a long way towards financial success as a practitioner. In the city a quack can always call in a consultant from the first two groups or he can send the patient to a hospital and thereby clear his own skirts and cover up his ignorance.

But the practice of the healing arts in a rural district or small town is quite different. A doctor may look the part and may have good offices, on the right street, but if his results are poor he is through.

A rural practitioner must be physically strong and willing to travel long distances day or night, winter or summer, over rough roads. He must be self-reliant, for there is no chance to call in a consultant, no hospital to rush to for aid, nothing but his own skill, ingenuity and nerve to take him through the worst emergencies with the eyes of relatives and often of the whole town upon every move.

In the country a patient is not a case but a personality, a friend, neighbor or acquaintance. Everyone knows everyone else. If Baby Jones cuts a tooth, it is known; if Mrs. Jones skips a menstrual period it may be a subject of remark and conjecture; if Mr. Jones has a pain or an ache it is a thing of interest and open to general discussion; not only is the name of the doctor in attendance known, but everything he says and does is remembered for future mastication and digestion. If Doctor So-and-So treats a case differently from Doctor So-and-So of the next town, and, above all, if the results are different, then the fat is in the fire.

In a factory community the compensation commissioner's office is the dispenser of medical news. If the doctor happens to get a poor result in a case that comes under the Workmen's Compensation laws then there is a general airing of the subject by the commissioner, the employer, the insurance companies, the retained lawyers and opposing doctors. The niceties of professional ethics play no part in such proceedings, the opposing doctor often taking malicious delight in damaging the reputation of his fellow practitioner. Choice tidbits find their way from such courts, supplying juicy morsels for the local newspapers.

Probably the most potent factors in undermining the rural doctor's reputation are the petty jealousies, sly remarks and innuendoes of the rival physicians themselves.

No poorly trained doctor can survive this constant gossiping, bickering, and merciless publicity, comparison and criticism. It is trying to the patience of the rural doctor, but it keeps him very alert, makes him cautious in what he says and does, and, above all, it makes him study the recent medical literature and sends him off frequently to visit the leading medical centres.

Rural people may not have the external polish of the city dweller, but they have good common sense and are frequently well informed on medical matters. They have strong likes and dislikes, know what they want and whether they are getting it. It takes a hard shelled quack to live in such a community with a record of many glaring mistakes. It is much easier to move to the city and hide in the crowd.

Rural districts are losing their doctors not because there is a general scarcity of physicians but for the following reasons:

1. They demand a higher type of physician than the average city practitioner and expect to pay less for the service.

2. A country doctor has a hard and strenuous life compared to the easy office-life in the city.

3. Country life offers very few of the refinements that are enjoyed in the city.

4. Rural districts want a local physician for only the emergency calls and these are too few in number to support an average physician. The ubiquitous

Ford makes it possible to run the chronic and subacute cases to the neighboring city. No matter how much ability the local physician may have, still a certain percentage of the people will think that the distant doctor is the best, just like the cows think the grass in the adjoining pasture is the greenest.

By lowering the medical requirements an irreparable blemish will be placed upon the medical profession without accomplishing the desired result.

If small communities need a doctor and they persist in demanding a good one, then they will have to offer suitable inducements to attract such a man. This can best be done by the community guaranteeing a certain income with a chance of making more.

Epidemiology of Scarlet Fever

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Some years ago I reported observations on the source and the manner of spread of scarlet fever, (1), (2), (3). The conclusions reached at that time were as follows:

A. For all practical purposes, the spread of the disease was due to nasal carriers. The carriers were either those of convalescence, of the missed walking case, or were those who had had the disease previously and during a later season or later years were cases of infections other than scarlet fever.

B. Whether for case or for carrier, cultures gave as satisfactory results when the morphology of a certain type of streptococcus was found as did the morphological report on the diphtheria bacillus.

Results were shown in decreased morbidity and mortality of the disease: the former was a measure of even absolute absence of return cases and of lessened secondary cases. This was brought about by the similar procedure we had learned in diphtheria. Some contact was responsible for the case infection and that one as a carrier was sought for. Carriers were also sought for irrespective of cases and were to be recognized by both clinical and bacteriological results applied during all absentee illness of school children. The measure of control of mortality was remarked, but the exact reason was not at the time appreciated.

It was of interest to me at the time that epidemiologists and some bacteriologists appreciated the facts brought out and in a number of cities took up the study of the carrier. On the other hand, a number of bacteriologists were emphatic in their opposition to the possibility of accuracy in differentiating streptococci by morphology in the absence of biological proof of characteristics. For the latter reason the statements four years later of Tunnicliffe and recently of the Dicks that a certain strain of hemolytic streptococci was biologically the organism found in, and the cause of, scarlet fever, may well bring the conditions back to my original statements. Continued field study of the past three years have borne out the facts and statements made for the first four years of observations and have yielded further material of value. An observation of former years, provocative of much discussion, was that during times of socalled grippe, scarlet fever was simulated (4).

I have followed some thousands of contacts and have yet to find that the case at onset is infectious for further cases. Where I could reach all the contacts I have always been able not only to link up the nasal or throat carrier causing the case but some other case as well. One of the most clear cut examples of the use of the culture work was given for carriers, Case VIII (1). An exact method of the control of epidemic scarlet fever in a tuberculosis sanatorium with approximately 150 patients and attendants was also related (2). The lack of infectiousness of the case at onset has been well shown during the past year. For reason of publicity of antitoxin possible only at the isolation hospital, more patients than ever have been hospitalized. In no instance have there been secondary cases referable to exposure by the patient. It has been usual to have return cases among the nonimmunes of the patient's family following the return home of the hospitalized patient. Such facts recall the older view that the most infectious period of scarlet fever was during the peeling. To substitute nasal discharge, purulent, bloody, often excoriating lip and cheek, for the peeling is to confirm the old order of observation. Recognition of this factor constitutes it the most important procedure in the prevention of the disease. During the past three years I have found that yearly, approximately ten per cent. of convalescents become such nasal carriers. I have found an average of two per cent. of the immunes in families with reported cases clinically nasal carriers. Their immunity dated from two months to seven years during the past three years, approximating a ten year period reported for Case VIII, a carrier confirmed by culture and history (1).

In all instances the carriers were convalescent from a recent respiratory infection, tonsillitis, pneumonia, or mumps for example, or from recent operative procedures such as tonsillectomy or mastoid operation. During the past three years I have not infrequently found a further essential fact. During the course of, or as has happened more frequently, during the convalescence of the patient, another member of the family, a susceptible, has developed an apparent nasal carriership. With no other history than a slight indisposition for a day or so, perhaps a slight accompanying fever, there has been neither rash nor sore throat observed as would label it a suspected or an observed case. Whether abortive case or otherwise, these apparently selfvaccinated individuals show the mucous membrane stigmata of carriership and have received as much attention in proper isolation as the other carriers mentioned.

During the past three years I have found that

accompanying varying frequencies of the disease, scarlet fever, there were varying frequencies of carriers. During and following mumps of two years ago, there was frequent replacement in the same family of later scarlet fever. An immune from scarlet fever, recently convalescent from mumps, was manifestly a nasal carrier with mucous membranes of tongue and throat suggestive of scarlet fever. The same was true following convalescence from other respiratory diseases. In the solution of these coincidences I found the apparent answer to the variations in mortality from scarlet fever. It was my experience that a recent convalescent carrier with nasal carriership always gave rise to a more severe secondary case. Yet more severe and fatal as well were the cases resulting from contact with an immune carrier convalescent from some other respiratory disease. An illustration of the usual such instance was as follows: An immune of the previous year was returned to his home from the isolation hospital convalescent from bronchopneumonia. There were five nonimmune children in the family. Within the week following, the youngest nonimmune child was sent to the hospital, a fulminant, fatal case of scarlet fever. Two succeeding severe cases followed in the older nonimmunes of the family and one neighborhood playmate of the immune child also developed scarlet fever. Following the first case I had found the immune child to be a probable nasal carrier but the warning given the family was of avail only after the further cases had developed.

The problem was again that of the earlier years. I had repeatedly sought a blood plate differentiation of streptococci to prove whether or not we were dealing with other complicating streptococci than the primary specific one found morphologically in cases and carriers. Following the recent work by Dochez and Blake, our city laboratory undertook to identify the scarlet fever streptococcus from field cultures. Reports were made from the gross findings of a blood plate and the fished colonies were studied morphologically, and controlled for hemolysis and the production of methemoglobin with a known strain of scarlet fever streptococcus. Two intercurrent facts made the study epidemiologically of much value. There was at the time a high frequency of German measles and of socalled grippe of all age groups.

Throat cultures were taken from forty-five reported cases of scarlet fever. In twenty-four instances controlled work was carried out, in ten instances the green producing streptococci reported by plate were not further controlled, in six instances report was made that streptococci were present but not identified, and in five instances no streptococci were found. Bacteriological results were complete from a total of twenty-four reported clinical cases, although the biological proof of specific agglutination was not done. The value of controlled work with a known scarlet fever streptococcus was evidenced by the early frequency with which a hemolytic staphylococcus was reported from the plate as a hemolytic streptococcus. In nine instances blood plates were reported as hemolytic streps, two of them being of the gamma type. On control work, six of the seven reported hemolytic streps were found to be nonhemolytic, and produced methemoglobin, the remaining one being hemolytic and not producing methemoglobin. Of the two reported as gamma hemolytic streps, one on controlled work proved to be the scarlet fever type and the other was nonhemolytic and produced methamoglobin. Two then of the nine reported cases were bacteriologically scarlet fever.

Clinically there was much of interest. Four of the apparently hemolytic streps from plate reports proved green producers by control were from the following clinical cases. One was the first of four cases reported within three days from a single family, the other three being removed to the hospital before cultures were obtained. All four were suggestive of grippe consequent on a convalescent case of grippe in an older child in the family, without evidence of eruption or other signs of scarlet fever. One was an adult with a quinsy, later incised. Two were in high school girls, both of whom were found to be contacts of another high school girl who in turn, as nurse maid afternoons to an infant age one, was as definitely responsible for infecting the latter, a reported case of the disease. A throat culture from this school girl carrier gave a green producing strep, nonhemolytic and producing methemoglobin on control. In four instances plate report of green producing streps was changed to hemolytic streps not producing methemoglobin on controlled work. There were then six instances of the twenty-four reported cases where bacteriologically the specific strep corresponded to a known scarlet fever strain. In seven instances plate reports of green producing streps on control proved to be nonhemolytic and producers of methemoglobin. Epidemiologically, five of these were most instructive. In one instance the case was an immune of the year previous. The physician in attendance questioned whether he was dealing with true scarlet fever and asked me to see the case. I advised him that he was not dealing with true scarlet fever, took a throat culture and advised a skin rash extinction test with a specific scarlet fever strep. On a revisit the following day a different physician was now in attendance. He had advised the family that it was a case of scarlet fever and reported it as such. The clinical course like the onset was in agreement with the culture later reported. Another instance was a typical case of German measles. Another was in an immune child of the year previous: the case now presented a septic sore throat and an atypical rash, the onset being simultaneous with scarlatiniform

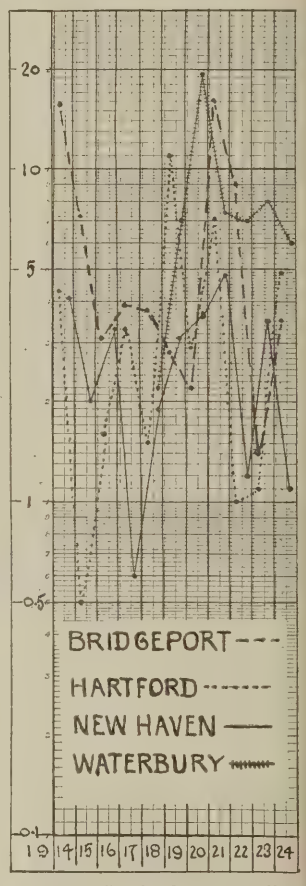

Fig. 1.—Scarlet fever mortality per 100,000, 1914 to 1924.

rashes of two younger children in the family neither having throat involvement, the course and convalescence of all three cases being that of grippe. Two further instances were very similar. From two of three children in one family, all reported cases of scarlet fever with one removed to the hospital, throat cultures were obtained. Both were green producers, nonhemolytic and producers of methemoglobin.

Cultures were taken from six evident cases of German measles. Green producing streptococci were reported from all although plate reading was not controlled.

There were six instances of referred possible cases where I sought the result of cultures as confirmatory of diagnosis that the cases were not true scarlet fever. In four instances green producers by plate and nonhemolytic, methemoglobin producing streps were reported. In one instance no differentiation of streps was reported and in the remaining instance a green producer on plate report was a hemolytic, nonmethemoglobin producer by control. In one of five instances the atypical clinical picture became by bacteriological methods a probable true case of scarlet fever.

Epidemiologically, I have ever been more concerned with carriers, convalescent or otherwise. Cultures were taken from four convalescent reported patients where nasal involvement was evident. One had been discharged a month previously without nasal involvement and three were not yet released from isolation. All four nasal cultures were reported by plate as hemolytic and on control were hemolytic and not producers of methemoglobin. Cultures were taken from twelve possible carriers. One was the throat culture of the high school girl previously mentioned. One was a throat culture of an immune of the previous year, the result being a report of fifty per cent. green producers and fifty per cent. hemolytic, the latter on control being the scarlet fever strain. The later history of the case was suggestive of the former organism being infective for the person while the latter organism was not transferred to others. In one instance the result was a hemolytic strep control positive, from a nasal carrier suspected of being the cause of three cases among his contacts. In three instances the nasal cultures proved green producers. Two of the instances were of importance. In one instance the nasal infection was field evident that he was responsible for a reported case of scarlet fever in his own family as well as in that of his cousin living remote, and the only contact of two simultaneously reported cases. Neither case proved to be scarlet fever clinically. The second instance was the most satisfactory I have yet seen. The instance was as follows:

Case.—W. K., aged five, a reported case of scarlet fever, was one of a family of four children, the youngest being a nursing infant of eight months. The patient in the reported case had an eruption lasting one day, was not only apparently well when investigated on the third day, but was without physical signs of mucous membranes involvement as well. As the patient could not be kept in bed, daily visits were made to watch developments. At the expiration of ten days there were no other signs than palpable posterior cervical glands and no further infections among the immediate family contacts. Returning at the expiration of the twenty-one days' isolation period, I found that the eight months' old infant had been seen by a specialist one week before for a sore throat. Two successive negative cultures had been taken, two doses of ten thousand diphtheria antitoxin had been given following which the specialist had informed the family that he could not save the infant's life. A medical practitioner of "years standing" was called in. He advised the family that the case was one of scarlet fever and diphtheria but that he could save the patient. At the time we saw the family, one week from onset of illness in the infant, the remaining two children had fading rashes without throat involvement, with a history of a day or two of fever, neither being confined to bed. The infant showed a bilateral marked cervical gland enlargement and was apparently septic. W. K., the patient of the original case, was now presenting an excoriating nasal discharge of ten days' duration according to the parent. The discharge yielded a green producing streptococci. At the end of a week the other two children were returned to school, the infant was admitted to the hospital where a diagnosis of bronchopneumonia was made and the carrier was isolated on the premises for a further two weeks. The infant was eventually discharged as well. In five instances nasal cultures from possible carriers were returned as negative for streptococci.

Whether then reported scaret fever cases are investigated from consideration of the morphology of streptococci in original field cultures or whether they are investigated from the viewpoint of streptococci culturally corresponding to a definite strain of hemolytic streptococci found in cases of scarlet fever and capable of producing an antitoxin for which certain statements have been made, the end result is the same, epidemiologically. Scarlet fever as a reported disease is not a clinical entity. There are years or seasons when there is a departure from the familiar type with rather characteristic symptoms and signs of onset, however mild or however severe. The departure from a public health viewpoint is one of change from low communicability to high, from one of rather definite signs to one of confusion and of doubt. There are years of low mortality and with few complications and other years of high mortality and many unusual complications. Epidemiologically, scarlet fever is simulated by German measles and by socalled grippe or better phrased, influenza.

Stripped of its complications, scarlet fever as diagnosed by its triad of signs, sore throat, eruption and temperature, is of low communicability and of low mortality. Whether complicated or simulated, the complications of otitis, of mastoids, of heart, of kidney, of joints, in fact of all pyemic manifestations are from other organisms, mainly streptococci of the green producing variety or viridans (I am not so sure but that the frequency of the socalled diplostreptococci, often overlooked, also shares equally). Such pyemic manifestations are frequent in other members of the family or contacts without the family and are as frequently assumed to have been missed cases of scarlet fever if such a later sequence occurs. A study of the results from hospitalized patients treated with the Dochez or the Dick antitoxin is in accord. Where such complications exist, they are not controlled by antitoxin treatment. Where they do not exist, anti-

toxin has seemed to have been credited with their prevention.

In nowise other fashion than with diphtheria, the epidemiology of the diseases scarlet fever included, is to recognize the bacteriology of the case and carrier, whether one of pure or mixed culture. From such findings search is to be made for the contact infector, a nasal carrier from convalescence of some recent respiratory disease. Uncomplicated specific disease whether diphtheria or scarlet fever may be controlled and the carrier of complicating organisms can be controlled from the further spread of the complicating organism producing primary infections in those immune to diptheria and scarlet fever.

If a clinical entity, the identification of scarlet fever is more than ever essential in the present day theorized control. With the Dick test for susceptibility, with specific antitoxin for aid in diagnosis by the blanching of the specific rash, and above all by the use of a specific antitoxin for both therapeutic and prophylactic use, rational use of all procedures is dependent on their use for a specific baceriological identity.

There is now accumulated sufficient clinical as well as epidemiological observations to show that an endeavor should be made to separate if possible, scarlet fever as an entity from not only its stimulators but as well, its complicators. Although the bacteriological investigation related has been limited, the sampling from the viewpoint of epidemiological factors together with the corroboration of our previous experience is more than suggestive. There is now at hand in recent literature record of case experience also corroborative. Most suggestive are those recently related by Park (5). Morphological identification of hemolytic streps from inoculated blood plates and the control of such streps with a known strain as is used for the production of specific antitoxin for hemolysis and absence of production of methemoglobin, in the absence of the demonstration of specific agglutinins would, together with the clinical rash extinction test, result in a better understanding of the various conditions of varying morbidities and mortalities of scarlet fever.

There may be added comparative statistical evidence of results of control of morbidity and mortality over an eleven year period of our work. Morbidity and mortality rates for the four large cities of the state vary little during the period, 1905-1914. For the period 1915-1924 the other three cities show similar rates for both morbidity and mortality. For this city for the period mentioned we have cut the total period mortality in two and have as well epidemic mortality rates under five per 100,000 population as compared to ten or greater for the other cities and for all four cities of the period 1905-1914. Approximately similar results have been obtained with morbidity. The illustration shows the mortality rates for the four cities mentioned.

CONCLUSION

Control of scarlet fever as diagnosed clinically is possible only when the factors that make up its variations in morbidity and mortality are elicited.

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3. Idem: Further Note on Scarlet Fever Carriers: *Ibid*, September 19, 1918.
4. Idem: Lessons from the Past and Possibilities for the Future: New York Medical Journal, May 19, 1917.
5. Idem: *Monthly Bulletin, Department of Health*, New York city, August, 1925.

731 Elm Street.

Some Observations on the Treatment of Constricture at the Neck of the Bladder

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Chronic enlargement of the prostate may be looked upon as a senile disease seldom occurring before the age of fifty, and being commonly met with after this; at a period of life as Sir B. Brodie observes, when the hair becomes grey and scanty, when atheroma begins to be deposited in the coats of the arteries, and when the arcus senilis forms on the cornea, the prostate often becomes increased in size, and may be productive of very serious effects upon the other urinary organs.

PATHOLOGY

This has been very thoroughly worked out, and I will not touch on that, only giving two illuminating illustrations and remembering the anatomical fact that the apex of the prostate is fixed by the triangular ligament.

Therapeutics offer us little relief, and the catheter while holding good for a short time, only too soon, falls by the way. Our only resort then, is surgery. The total removal of the prostate certainly is ideal, and when a success gives all we could ask. But unfortunately our clients are not test tubes for us to turn out certain reactions in the laboratory. The surgeon claims a small mortality while the practitioners on the other hand say the loss is excessive. Now what are we going to do about it? The practitioner says the mortality is too great for the operation if it can possibly be lessened, and have these old men spend the remainder of their days in peace.

Believing as I do that I have a more benign procedure that offers as good results, is the object of this paper. The old "boutonniere or buttonhole" operation as of old, but bisecting the prostate with an instrument like Dupuytren's, or Briggs' perineal lithotome, that was used when doing the median operation for stone, is to my mind the procedure of choice. It can be done at the patient's home, finished in a shorter time than the suprapubic; three to four minutes in

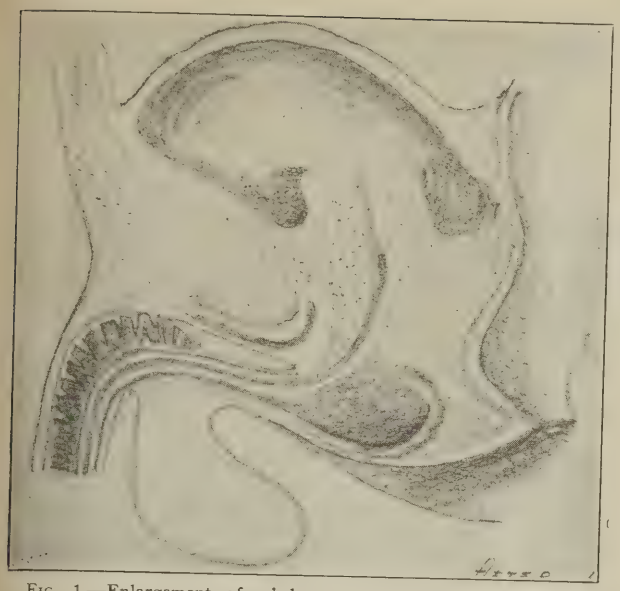


FIG. 1.—Enlargement of whole prostate, with the formation of anteprostatic and postprostatic pouches.

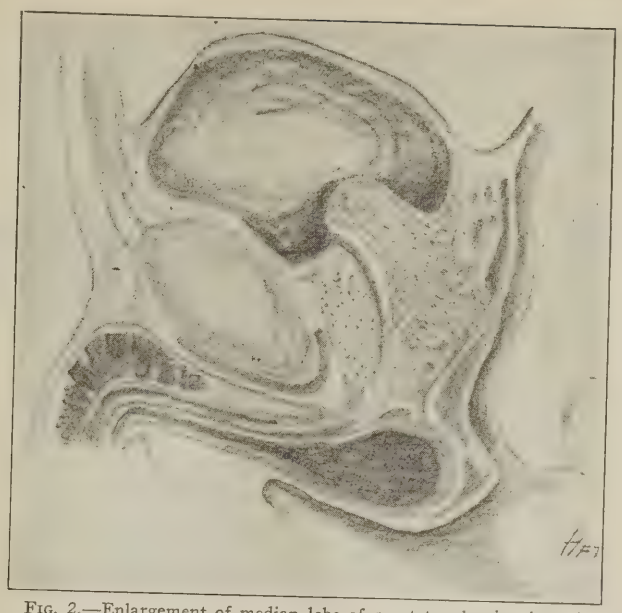
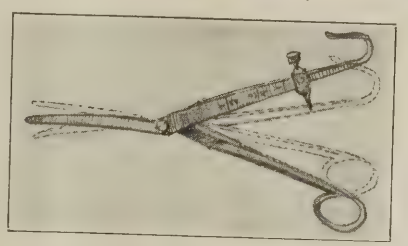


FIG. 2.—Enlargement of median lobe of prostate, showing its valve-like action.

dexterous hands gives better drainage. He can be out of bed almost immediately after the recovery from the anesthesia, does not require skilled nursing, and after the first week or ten days he can look after himself, can be taken out in a car, sitting on his absorbent pad, and his recovery is certainly enhanced by these facts.

Dupuytren's method.—A crescentric incision is made half an inch in front of the anus, the two extremities which terminate on each side between the anal aperture and the tuberosities of the ischium or a little nearer the ischium, than to the anus. The membranous portion of the urethra being reached and laid open, the double lithotome cache is introduced closed into the groove of the staff, with its concavity directed upwards; when it has fairly entered the bladder the instrument is turned upon itself, so that its convexity is upward, and the blades are expanded by the grip of the right hand upon the lever; with the left hand the shaft of the instrument is sustained, and pressed somewhat firmly against the pubic arch, so as to prevent any lateral displacement and the lithotome is now slowly withdrawn. During this retrograde movement the handles must be gradually lowered between the thighs. By this method the prostatic gland is divided obliquely downwards and outwards on both sides, to any extent which may be required or which may be deemed proper; the expansion of the blades and consequently the size of the prostatic incision being regulated by a movable stop. If the operation is properly performed, the artery of the bulb, with the transverse and superficial perineal are avoided, and a larger opening is made in the prostatic portion of the urethra than by any other method. (Frank H. Hamilton, *Principles and Practices of Surgery*).



Briggs's lithotome.

For further details of the technic I use the old Briggs's lithotome, which we will have to rechristen a prostotome, following Dupuytren's method of detail. One can now easily introduce one or two fingers into the bladder, and if he sees fit can snare off any projections, and it may be an easy matter for him to peel out part of the prostate. If bleeding is of any note, gauze packed around a large drainage tube which is fastened by a stitch or two will cause it to stop and at the same time hold the cut edges apart preventing any attempt at uniting, which is hardly possible in a septic bladder.

The relief brought about by this procedure has to be seen to be realized—like magic our patient is at ease, he is able to get a good rest, the bladder is well drained and physiological rest is obtained, the first for many a day; septic absorption ceases, each drop of urine comes away as soon as passed into the bladder, and the old bladder wall lining in due time exfoliates—in many cases the prostate undergoes a remarkable process of involution—the urine returns to normal and our man is like a new being. The external wound soon closes leaving two deep channels in the prostate, and in a short time we find that he is functioning as well as if the prostate had been removed, with far less shock and less time in bed. And for this permanency over a long period, I have never seen a relapse, unless it was from malignancy.

I understand the elder Dr. Briggs of Nashville, Tennessee, treated his prostatic patients in this way some forty or fifty years ago, and Dr. J. W. Hale of Waco, Texas, who was with Dr. Briggs for some time tells me that he has operated on some one hundred and fifty prostatics, using this technic with but one death, and that he still favors this method over that of enucleation, and as to the functioning results, one gets all that can be desired.

Since writing this article Parker Syms of New York comes out with an article on Perineal Prostatectomy in the *Journal of A. M. A.* of January 23, 1926; which to my mind is the best and simplest that has as yet been devised. But, in the procedure I

have described, bisecting the prostate is, in my opinion, very much simpler, and there is not the danger of cicatricial contraction that we sometimes see when things do not go well in enucleation. However, while I have never found it necessary to enucleate, it seems to me it would be an extremely simple procedure for the finger to hull-out the gland and with such remarkable ease.

Extravasation of Urine

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The importance of the early recognition and treatment of urinary extravasation cannot be too strongly emphasized, for as is well known, the health of such sufferers is already sufficiently undermined by the results of a tight stricture of long duration with its consequent renal and possibly cardiac complications, and in view of the fact that such patients are usually advanced in years, many of whom being chronic alcoholics, they cannot withstand the gravity of the infection which inevitably follows imbibition of the tissues with urine. Hence recovery from this illness is in direct ratio to its early diagnosis and treatment. These patients are seldom seen in private practice, but are usually brought into the public hospital in a moribund state.

Then there is another class of cases, which in a perfect state of health meet with an accident such as falling astride a sharp object, and sustaining a rupture of the urethra with extravasation of urine. The operative results in this class of cases are far more fortunate than in the former for two reasons: first, owing to the accident they receive earlier attention; secondly, their urine is less infectious.

Many patients seek admission to a hospital with a train of symptoms outside of the urinary tract, such as gastrointestinal irritation, evening rise of temperature, marked anemia and malaise, etc., but which upon close investigation are traceable to the urinary tract as a manifestation of urosepsis, being secondary to an obstruction in the lower urinary tract and giving rise to back pressure. Such patients are not infrequently admitted to the general medical wards with urinary infiltration, or it may first develop during their stay in the hospital. Since the general symptoms eclipse the local ones, the condition is either too lightly considered as one of epididymitis by both patient and physician, or if recognized at all, is done so rather late, when red streaks of lymphatics are seen running up to the abdominal wall. When this occurs the prognosis is usually grave.

The course of the disease depends to a great extent upon the variety of extravasation, as determined by the location of the rent in the urethra in relation to the different layers of the perineal fasciæ.

When the rupture of the urethra occurs between the anterior layer of the triangular ligament and Colles's fascia, the urine may then break through Buck's fascia of the penis and imbibe the peripenile tissues with subsequent necrosis in them, or follow the course of Colles's fascia, where it communicates with the fasciae of the scrotum and abdominal wall, infiltrating the scrotal tissues first on one side then on the other, and continuing on to the abdomen. The latter is the more common course the urine takes, although it is not infrequently associated with extravasation of the peripenile tissues. Infection in this type is severe, and traveling very rapidly, leads to a fatal termination in a comparatively short time. The tissues being swollen and red are very sensitive to pressure. The temperature is that of sepsis, the pulse is rapid, and the respirations are in proportion to the temperature, and to the gravity of the infection which often invites a state of acidosis. It is usually associated with extremely marked prostration.

Then there is another variety of infiltration between the two layers of the triangular ligament, where, owing to their attachment to the pubic bones, it becomes localized for a comparatively long time. Ultimately it may find an exit in the skin of the perineum and the scrotum, forming either single or multiple fistulae, or it may break into the ischiorectal fossae and into the gluteal regions. The prognosis in this type of extravasation, due to its strict localization, is much more favorable.

Lastly, another variety of extravasation, though fortunately extremely rare, is one in which the urethra ruptures above the superior layer of the triangular ligament. Under such circumstances the urine invades the pelvic tissues, notably the space of Retzius and may even break through the peritoneum. The prognosis in this class of cases is obvious. This complication can arise only under the most extraordinary circumstances, such as, a fracture of the pelvis, a phlegmonous inflammation of the prostate, seminal vesicles, or both. Traumatism inflicted by the surgeon's knife in the course of an external urethrotomy upon an impassable stricture without a guide or by a misdirected guide following blindly and meekly the course of a false passage within the urethra, thus leading the knife outside of, and away from the urethra, may ultimately result in infiltration of the space of Retzius. A possible pelvic urinary infiltration should be borne in mind in case of an unexplainable death following a simple uncomplicated external urethrotomy, especially when associated with pain and distention in the suprapubic region in the presence of good drainage from below.

From all this, one might be led to believe that, rupture of the urethra secondary to a tight stricture is absolutely essential to the cause of extravasation of urine. That this is not invariably the rule, may be demonstrated on patients with urinary infiltration who have no difficulty in voiding, and in whose urethrae, relatively large instruments may be passed and yet their tissues are steeped in urine. Wh

seems essential, however, is an infection of some of the urethral glands whose long sinuous ducts imbedded in the corpus spongiosum are suppurating and breaking through the tissues of the urethra, thus connecting the intraurethral lumen with the periurethral tissues. Suppuration of Cowper's glands may be responsible for some unexplainable cases of extravasation.

As a matter of digression, I may add that, many strictures of the densest and most extensive variety, are caused by some abnormal glands infected with the gonococcus. These glands suppurate and break through their capsule into the meshwork of, but not through the outer sheath of the corpus spongiosum. The urine, in its descent from the bladder, dissects its way through the erectile tissue of the spongy urethra, not unlike a dissecting aneurysm, infiltrating the tissues with its salts, and causing the formation of periurethral abscesses, or a massive type of periurethritis with subsequent cicatricial contraction of the profoundest degree. This happens more commonly in the bulbous urethra. Strictures, which form suddenly after a primary attack of gonorrhea, are usually caused in this manner.

In order to demonstrate that, an impassable stricture is not necessary for extravasation of urine, I cite the following case:

Case I.—J. H., colored, aged seventy-one, was brought into the Metropolitan Hospital on May 16, 1922, in a state of coma. On examination, an enormously distended scrotum was found, which proved to be a urinary infiltration. There was no difficulty in entering the bladder with a fairly large sized catheter. Rectal examination revealed a hypertrophied prostate. His condition did not warrant any radical operation, except that of multiple incisions into the scrotum under a local anesthetic for the evacuation of the urine. He died the same day.

Another case illustrating that early intervention is conducive to prompt recovery:

Case II.—C. H., aged thirty-five, admitted to the Metropolitan Hospital on April 6, 1923, with an acute gonococcal infection. On August 7th, he developed a large scrotum infiltrated with urine. His temperature was 103.6, pulse 106, and respiration 30. He was operated on the same day. The scrotum was incised in several places; about a pint of foul smelling urine mixed with pus was liberated, and a catheter drainage instituted. On August 28th, he was up and about, but continued his treatment for gonorrhea. His trouble started from a tight stricture in the bulbomembranous urethra and an infected Cowper's gland on the left side. His age, general condition and early intervention stood him in good stead.

The following case illustrates the loss of valuable time, which unfortunately happens in a considerable number of cases:

Case III.—H. Mc., aged fifty-eight, admitted to the general medical ward on February 23, 1923, for the treatment of heart disease. Two weeks prior to his entry to the hospital, he felt a sudden pain as if something gave way in the perineum, and passed a small quantity of bloody urine. He had marked urinary frequency, almost a constant desire to void. The urinary stream was very small, amounting practically to dribbling. He entered the hospital not so much for relief of his urinary difficulty, as for that of his heart condition. Up to February 28th, he urinated spontaneously, but from that day on, he was unable to void, except a few drops at a time. Meanwhile, his difficulties increased, and his bladder became visibly distended. He was aspirated suprapubically, for attempts at urethral catheterization were futile. On March 5th he was seen by the urological service. On examination, a marked distension of the scrotum and perineum as well as that of the bladder was seen. He was operated on the same day, but succumbed on the 10th of the month to uremia. He evidently did not think it of sufficient importance at the time he noted blood for the first time to invoke medical aid, thinking as a good many other ignorant patients do when asked about any urinary difficulties that, they have none, intimating, as is a favorite expression of theirs, that their kidneys work well. This often leads the inexperienced physician astray, and he does not suspect the grave situation until it is too late.

That all cases of extravasation are not hopeless even when the urine has broken through the tissues and caused necrosis in them, is demonstrated by the following case:

Case IV.—T. H., aged fifty-three, admitted to the tuberculous ward on March 19, 1923. During his stay there, he developed an ischiorectal abscess, for which he was operated. On June 9th, he had acute retention for which he was catheterized that day and the following three days. On June 12th, his penis and scrotum became swollen; on June 15th, the urine was seeping through the scrotal skin, which became black and purple in places. On June 18th, he was transferred to the urological service, where he was operated under local anesthesia. He made an uneventful recovery and was discharged August 13, 1923.

Case V.—W. K., aged fifty, admitted February 10, 1922, with retention of urine and extravasation, the scrotum reaching the size of a grape fruit, and necrotic in places; on operation an impassable stricture was found. In order to expedite matters, since the patient was in a moribund state, a cystotomy was performed and the scrotum drained. The whole operation lasted five minutes. The patient developed pulmonary edema the same day and died the next. His extravasation was probably of a few days standing. Both his age and duration of illness militated against his recovery.

The oldest patient to be operated on for extravasation was A. O., aged eighty-nine, admitted October 20, 1920, with swelling due to urinary extravasation of penis, scrotum, and suprapubic region. He had absolute retention for fifteen days prior to his entry into the hospital. He had an impassable stricture. Under an anesthetic, the urethra was entered by a catheter under great difficulty, left in for drainage, and multiple incisions made into the extravasated area. On November 2nd, he became comatose and died of uremia and cardiac decompensation.

Of all the patients operated at the Metropolitan Hospital since 1917 ranged from the ages of thirty-five the youngest, to eighty-nine, the oldest. While I could cite quite a number of other cases, meeting with the same tragic end, I shall mention just two more cases to illustrate a complete closure of the urethra from an extraneous cause:

One of them, occurring at the Metropolitan Hospital, on account of its extreme rarity, and not having read of a similar case in literature, was indelibly impressed on my mind, so that with the exception of the date of occurrence, I can cite with precision and accuracy the following case from memory:

CASE VI.—A man fifty-eight years old, just recovered from a herniotomy, was brought to the urological service with acute retention of urine. On examination, the catheter was arrested at the junction of the bulbomembranous urethra, and on its withdrawal, liquid feces came away with it. The scrotum and perineum were enormously distended with urine and feces. The examination of the rectum, while the patient was under the anesthetic, revealed a large nodular mass surrounding the rectum and practically shutting off the exit to the solid intestinal contents. Owing to the close proximity of the rectum to the membranous urethra, in fact, being intimately connected with it by the common attachment of the rectourethral muscle to both, the tumor broke through the rectal wall into the bulbous urethra at the junction of the bulb with the external sphincter and allowed the escape of feces into the surrounding tissues. The urine likewise descending from the bladder through the membranous urethra met with a similar fate; its further advance through the urethra having been hindered on account of closure of the bulbous urethra, and seeking the place of least resistance, it broke through the bulb and escaped into the perineal and scrotal tissues. The operation consisted in establishing a permanent urinary suprapubic fistula, forever diverting the urinary stream from its normal channel, and making multiple incisions into the extravasated tissues and draining them thoroughly. The general surgical service was called in to establish a permanent anal fistula, but, owing to his poor condition, they applied palliative measures of dilating the stricture and passing a large rectal tube to divert the fecal stream. Contrary to my expectations, however, he hold on tenaciously to life for a period of five months, at the end of which time, he died of general cachexia incidental to his carcinoma.

While citing but a few cases, space not permitting more, I believe that I have emphasized and demonstrated sufficiently the seriousness of the disease, and the importance of early diagnosis. The sudden appearance of a bilateral swelling of the scrotum in one who has apparently been in perfect health, but who gives a history of having had one or more attacks of gonorrhea with possibly some frequency and dysuria, and the swelling increasing in size and extent, associated or not with a similar swelling of the penis, and a swelling in the suprapubic region due to a distended bladder, with complete or incomplete urinary retention, leads to but one diagnosis—extravasation—add to this the characteristic edema of the scrotum, lymphangitis, fever, with all its symptoms, and above all, marked prostration, the diagnosis is beyond the peradventure of a doubt.

Ordinarily the following conditions must be differentiated from it. Acute bilateral epididymoorchitis, acute hydrocele, hernia, and for the sake of completeness, though this question rarely presents itself, elephantiasis due to filaria hominis. Occasionally after a bilateral bubonectomy of the inguinal glands a marked edema of the scrotum develops, but should never interfere seriously with the proper diagnosis. The history of the case as to onset and duration, pain and tenderness—the latter two symptoms, not being conspicuous in extravasation, except in the last stages when infection has been superadded to the extravasation—with absence of prostration and some of the other symptoms and physical signs enumerated in connection with urinary infiltration, should differentiate acute inflammation of the testes and epididymes from extravasation of urine. This is really the most common illness confused with that of urinary extravasation.

The others can be easily differentiated by the history, onset, duration and absence of symptoms of extravasation.

The prognosis depends on the duration of the extravasation, the age of the patient and the primary cause. Complete urinary suppression with impending uremic symptoms usually usher in the end.

The indications for treatment are drainage of the urine from the tissues, restitution of the normal direction of the urinary stream, in other words, away from the tissues which have been waterlogged by urine; combatting the infection, and supportive measures for the extreme prostration caused by the toxemia and probable acidosis.

Since the patient as a rule is in extremis, it is requisite that he be given due consideration for that, and that the operation be performed as expeditiously as is consistent with his safety. If the stricture cannot be entered without a great loss of time and with a great deal of dissection of the tissues, thereby enhancing the spreading of infection, I believe the safest procedure is to open the bladder, drain it and the space of Retzius, which I think is more often infected than suspected, and extensive multiple incisions into the extravasated areas be made. If the stricture can be entered with a catheter, then the best surgical judgment is to fasten the catheter into the bladder, incise the tissues, and wait for satisfactory convalescence to complete the urethrotomy. To combat infection, and shock, subpectoral infections of normal saline, rectal infusions of five per cent. glucose and five per cent. sodium bicarbonate solutions should be given by the Murphy method every four hours. In extreme cases blood transfusions may be resorted to.

120 EAST THIRTY-FOURTH STREET.

Case VII will appear in the author's reprints.

Energy Expenditure of Women During Horizontal Walking at Different Speeds.—H. Monmouth Smith and Dortha Bailey Doolittle determined the energy expenditure of women during horizontal walking, and found that it is of the same degree as that of men when walking at moderate speeds this value being from 0.450 to 0.550 calorie per horizontal kilogrammetre. The energy expenditure per horizontal kilogrammetre is greater at an abnormally slow speed than at moderate speeds. The menstrual period appears to be without definite influence on the standing metabolism.—*Journal of Biological Chemistry,* October, 1925.

Practical Therapeutics

TREATMENT OF HYPERTONUS AND ARTERIOSCLEROSIS

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New York

Animasa is an organic preparation which, when administered by mouth, reduces normal as well as hypertonic blood pressure regardless of its origin. It is derived from intima and media of young sound fat cattle, fetal extract and by products of erythrocytes. Animasa, which abounds in protein substances, differs from the vascular preparation of Heilner as well as his cartilaginous extract sanarthrit. Heilner's preparations are protein free.

The preparation is supplied in the form of a pellet, which is sugar coated. Professor Griesbach, of the University of Giessen, Germany, made the following test: Samples of the somewhat hygroscopic contents of the pellets were reduced to ashes, after having been dried in a vacuum at 100° C. until they had attained a constant weight. The results from the three samples were as follows: First sample, 5,537 per cent.; second sample, 5,184 per cent.; third sample, 6,263 per cent. ashes. Tests for phosphoric acid negative. CO_2 and F. could be pointed out. Spectroscopic tests showed only the natrium line. Suspected calcium was not found either by precipitation or by spectral analysis. A watery infusion of the original substance gave positive biuret reaction. The kind of proteins has not been definitely determined. Analysis of the elements made with two samples gave the following results: First sample: C, 50.23 per cent.; H, 6,763 per cent.; N, 14.74 per cent.; S, 0.978 per cent. Second sample: C, 49.75 per cent.; H, 6,609 per cent.; N, 14.43 per cent.; S, .901 per cent. The nitrogen contents were controlled by two micro-kjeldahl determinations. One showed 14.29 per cent., the other 14.33 per cent. N. The average of the four nitrogen tests showed 14.45 per cent. This would correspond approximately to an amount of protein substances of 90.3 per cent.

For the last several years this preparation has been used successfully in various clinics abroad for the treatment of hypertonus and arteriosclerosis, in certain forms of migraine, and also in spasmophilia. Various investigators assert that it brings about an improvement in the arterial wall in arteriosclerosis. Dr. F. Jacoby, of Magdeburg, Germany, has used animasa in old arteriosclerotic luetics with very good results, he uses the preparation in combination with the antiluetic treatments. Dr. Migeod, physician in charge, Bad Tolz, Germany, has been using this remedy in both mild and severe cases of arteriosclerosis with good results. He says, "From my own experience with animasa I consider it a most suitable remedy for either the incipient or the fully developed diseases of the arterial walls. It counteracts poisonous elements in the blood circulation and restores zest in life and work as well as insures a comfortable old age, in fact under certain conditions even means prolongation of life."

Eminent research workers have shown that an intestinal wall, although scarcely changed in a pathological way, may occasionally permit the passage of albumins that are foreign to the organism. These foreign albumins (Fremde eiweissstoffe) may give rise to toxic irritation. Urticaria caused by ingestion of some food stuffs and other phenomena of alimentary intoxication, likewise the idiosyncrasies toward different foods, are clear signs of toxic protein effect caused by the partaking of them by the oral route.

Widal, Funck, and many others state that very similar processes take place during the rise of certain metabolic diseases. Pfieffer found that products of albumin decomposition could raise or lower the blood pressure in proportion to the amount of the dose administered and in accordance with albumin decomposition. Watelet and his coworkers succeeded in aborting an asthma, which was caused by anaphylaxis by administering a small antianaphylactic dose of peptone.

Funck and Hülse have demonstrated by the Abderhalden method that products of protein decomposition are to be found in the sera of patients suffering from arteriosclerosis. They were able to show further that these foreign products of protein decomposition will pass through the normal intestinal wall unchanged. These products circulating in the blood led, as was proved, to a permanent vasoconstricting effect.

Kuczynski, Ortloph, Volhardt and many others have shown that this vascular spasm led to a change in the intima of the arteries and subsequent calcification.

According to many authors, the majority of arteriosclerotic affections are due to the foreign products of protein decomposition circulating in the blood. A number of investigators have succeeded in inhibiting the effect of these products of protein decomposition by oral administration of other decomposed proteins (eiweiss abbaustoffe). Watelet and Widal had great success in thus treating angiospasmodic affections. Brack obtained good results in affections of the liver.

Wirtz succeeded in neutralizing or inhibiting the action of the decomposed proteins found in the circulation of arteriosclerotics with products of decomposed proteins obtained by a special process, which passes through the intestinal wall unchanged and brings about a lowering of blood pressure. He combined this blood pressure reducing substance with the extract of intima and media of arteries, which is believed to restore and strengthen the selfprotecting powers of intima and media. In the diseased arterial walls it is supposed to bring about an arrest and possibly a repair of the arteriosclerotic process.

Recently, Hirsch, of Jena, confirmed the effect of such a sensitization reaction and the effect of these hormonelike substances, which pass through the intestinal wall unchanged.

If the hypertension or arteriosclerosis is not due to factors described above, namely, the effect of the foreign proteins circulating in the blood but due to

some other causes, then the second mode of action of animasa vis: the organic specific influence on the diseased arterial walls shows itself in the evident improvement of arteriosclerotic ailments, as evidence by reports of patients as well as clinicians.

Heilner, of the University of Munich, succeeded in preparing an extract of intima and media, which, injected intravenously, has a beneficial effect on the diseased vessel walls in arteriosclerosis. This treatment, however, has frequent dangerous reactions that limit its use.

For the last several months, I have been using animasa in thirty-nine cases of hypertonus and arteriosclerosis, with successful results in each instance. Below are the histories of several typical cases:

Case I. Mrs. I. T., sixty years old; three children in good health, no miscarriages, husband in good health. A diagnosis of arteriosclerosis and hypertonus had been made. I first saw her on July 29, 1925 when she complained of precordial pains, frequent choking sensation, palpitation of the heart, shortness of breath on exertion, terrifying dreams and fatigability. Blood pressure systolic 212, diastolic 162. She was put on tablets of animasa.

On August 6th, her blood pressure was 188/140 and her condition was much improved. On September 28th, blood pressure was 180/120 and condition same as on August 6th. October 13th, blood pressure was 182/110; condition unchanged. October 26th, her blood pressure was 180/116 and no tablets had been taken since October 13th.

Case II. H. A. D., male, pharmacist, widower, for the last several months had been complaining of steady pains in the right temporal region with frequent shortness of breath, dizziness and insomnia.

Diagnosis; arteriosclerosis and hypertonus. On April 7, 1925, the patient's blood pressure was 196/158. He was given one animasa tablet three times a day. On April 19th, his blood pressure was 162/130, all symptoms had disappeared, and he was feeling fine. On June 11th, blood pressure was 158/130, and general condition was unchanged. On July 21st, his blood pressure was 162/130; no tablets had been given for a week, and his condition was unchanged. On September 21st, his blood pressure was 156/120 and he was in excellent condition.

Case III. B. A. S., female, widow, seventy-three years old, had been confined to bed for a number of months. She complained of severe headaches, dizziness, palpitation of the heart, shortness of breath, indigestion, insomnia and was afraid to leave her bed. Her teeth were in a bad condition and they were subsequently extracted.

Diagnosis; arteriosclerosis and hypertonus. February 17, 1925: blood pressure 240/130; she was put on two tablets of animasa three times a day. March 2, 1925, blood pressure 165/88; condition much improved. March 23, blood pressure 160/98; all symptoms disappeared. May 14, 1925, blood pressure 166/92; no tablets for a month. June 17, 1925, blood pressure 158/100; no tablets for three weeks. July 23, 1925, blood pressure 154/110; tablets for one week. September 14, 1925, blood pressure 168/120; no tablets taken. November 6, 1925, blood pressure 162/100; no tablets taken; patient in fine condition.

Case IV. A. W., male, widower, fifty-six years old, complained of headaches, dizziness and ringing in the ears. Diagnosis, arteriosclerosis and hypertonus. July 27, 1925, blood pressure 206/160; put on two tablets three times a day. August 3, 1925, blood pressure 152/116; patient said that he felt much better. September 5, 1925, blood pressure 148/116; patient said he felt fine except for an occasional ringing in the ear. September 29, 1925, blood pressure 158/116; no tablets. October 15, 1925, blood pressure 138/110; no tablets. October 28, 1925, blood pressure 142/98; no tablets.

Case V. O. M., male, sixty-five years old, elevator man; complained of headaches, dizziness, palpitation of the heart, shortness of breath on exertion, feeling of numbness in both upper extremities, especially on the right side.

Diagnosis, arteriosclerosis and hypertonus. May 7, 1925, blood pressure 204/136; put on two tablets three times a day. June 15, 1925, blood pressure 176/132; condition much improved. July 7, 1925, blood pressure 172/128; no tablets taken. August 24, 1925, blood pressure 170/112; condition much improved.

Case VI. L. A., female, forty-seven years old, housewife, had been complaining for the past several years of headaches, dizziness, blurring of vision, insomnia, shortness of breath on exertion, indigestion and frequent urination. She had been treated by numerous physicians with little or no relief.

Diagnosis, hypertonus. March 18, 1925, blood pressure 172/138; patient given two tablets three times a day. March 26, 1925, blood pressure 150/110; patient much improved. May 6, 1925, blood pressure 110/70; patient was feeling fine, tablets were discontinued. July 10, 1925, blood pressure 122/90; patient was in fine condition.

COMMENT

The results obtained from the use of animasa in thirty-nine cases of hypertonus and arteriosclerosis have been beyond my expectation. It is administered by mouth and there is no reaction following its intake.

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Notes on the Etiology of Eczema*

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Eczema, as a dermatological entity, is first mentioned, according to Hebra, by Aetius of Amida (A. D. 543). For many centuries it comprised the most of dermatology, and was considered due to a lack of equilibrium between the body humors. Willan, in the latter eighteenth century, first described the disease with any accuracy; but limited it to the moist vesicular forms, including all types of acute dermatitis. Other observers added to the multiformity of the disease, particularly Erasmus Wilson, who included all dry forms of eczema; until about half a century ago, it comprised nearly sixty per cent. of cutaneous conditions requiring treatment. Beginning with Unna, the pendulum began to swing in the opposite direction, until today eczema appears as a diagnosis in less than twenty per cent. of cases. The reason for this apparent decrease is the result of an elimination of various types of socalled eczema, which have been reclassified under a definite etiology, and now appear as separate and distinct disease entities.

In view of the meagerness of our knowledge regarding the causation of eczema, I think the preferable way to consider the subject is by a process of exclusion. Naturally, the first cases to exclude are those now considered noneczematous in nature and of a definite etiology and pathology. Following that, we will consider the many alleged causes of eczema and exclude them as predisposing and contributory factors, rather than real exciting agents, leaving the true nature of the disease *pro nunc* unknown.

The diseases formerly identified as eczema, and which are now recognized as separate conditions may be divided into two classes: first, those in which the etiological factor is bacterial or mycotic; secondly, those which are dependent on irritation alone for their production, are preceded by itching, never vesiculate, and do not necessarily follow socalled eczema.

Socalled Eczema Due to Parasites

1. seborrheic dermatitis

One of the first diseases to be eliminated from the general classification of eczema was seborrheic dermatitis. This was described and defined by Unna in 1887 (1). His original description included most of the socalled eczemas occurring in "seborrheal regions," and in addition pityriasis capitas (Van Harlingen), seborrhea sicca, seborrhea corporis (Duhring), lichen circumscriptus (Willan and Bateman), lichen annulatus (Wilson), and lichen gyratus (Biett and Cazanave), making it probably the most common of all skin diseases.

From scales of seborrheic dermatitis have been isolated, two organisms: The *flaschenbacillus* of Unna (spore of Mallassez), which resembles a yeast rather than a bacterium, and the Micrococcus cutis communis of Sabouraud, which is probably a staphylococcus.

Although Unna's original views have not gained general acceptance, the disease is recognized as infectious in nature and dependent upon parasitic agents for its production.

2. dermatitis infectiosa eczematoides

This disease was first described by Engman in 1902 (2), who pointed out that it was not eczema in the then accepted sense, bearing an intermediary position, with some characteristics of impetigo, although not identical with socalled impetiginous eczema. It is definitely infectious in nature, the staphylococcus aureus and albus being the causative factors. These can be isolated and experimental autoinoculation successfully performed, thus fulfilling Koch's postulates. The disease attacks the exposed surfaces of the skin, frequently gives a history of trauma or infection, and yields to ordinary antiseptic and germicidal applications.

3. epidermophytosis

The definition of epidermophytosis as a distinct clinical entity has been the greatest step in advance toward classifying our knowledge of eczema during the last quarter century. Although the definition of the parasitic nature of seborrheic dermatitis by Unna added much to our knowledge of the disease, it has not received the general acceptance that has been accorded epidermophytosis. Much of the work in its identification was done by Sabouraud, Castellani, Chalmers, Ormsby and Mitchell. It includes the

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eczema marginatum of Hebra; also many cases of chronic eczema of the palms and soles, and some cases of general patchy eczema. The clinical characteristics are not unlike eczema, as we are acquainted with it, except that it is more sharply defined, chronic in nature, and does not respond readily to ordinary stimulating applications. In the scales and deep seated pustules may be found a tinea, usually the Epidermophyton cruris (Castellani).

Socalled Eczemas Due to Irritation

1. neurodermitis

This condition of the skin, frequently diagnosed as eczema, has been allotted a variety of names, the more familiar being lichen simplex chronicus (Vidal), lichen chronicus circumscriptus (Willan and Bateman), prurigo circumscriptum, and pruritus with lichenification. The nosology and etiology of the disease (if it is a disease sui generis) are obscure and confusing. The majority of the French school of dermatologists consider neurodermite as a distinct disease, and see no reason for the apparent confusion, regarding its classification. Brocq has defined two types of lesion (3), neurodermitis circumscriptus and neurodermitis diffusus. Dermatologists, other than the French, interpret neurodermitis as a manifestation of prurigo or eczema or lichen. The clinical progress of the disease differs so decidedly from these three conditions that there should be no difficulty in distinction. Neurodermitis is not dependent on any irritation of external nature for its production, the lesions are preceded by itching, and never vesiculate.

2. fox-fordyce disease

This dermatosis, also known as "a chronic papular dermatitis of the axilla," was described by Fordyce (4) as regards its histological aspects, and by G. H. Fox (4) as regards its clinical features. Fox's tentative diagnosis was a chronic lichenoid eczema; but on its lack of response to stimulating therapeutic measures a biopsy was done, revealing the condition to be a hyperkeratosis, extending into the sweat glands and hair follicles.

The disease is usually limited to the axillæ and pubes, is papular in character, occasionally associated with fine fissures due to a hyperkeratosis and acanthosis of the epidermis, and is very pruritic. In a later paper Fordyce (5) offers as his opinion that the disease is identical with Brocq's neurodermite, and is due primarily to irritation which is probably toxic in origin.

Having eliminated a large number of socalled eczemas, we are now prepared to consider those factors instrumental in production of eczema. Whether eczema really exists as a clinical entity, distinct from dermatitis, is an open question, aside from the purpose of this paper.

Etiologically, the various conditions predisposing to eczema can be divided into internal and external. I call them conditions, because they cannot be called causes, since the latter invariably result in a definite effect. Such is not the case, since the apparent cause may exist repeatedly without the same effect, and vice versa.

3. eczema following external irritants

This type of eczema may be called a developmental or evolutionary eczema, since it succeeds on a prior existent dermatosis. Following I have enumerated the various agents which frequently give rise to an erythema, sometimes resulting in a persistent eczema. Along with each irritant I have enumerated the number of cases which have developed eczematous lesions. The percentages are of necessity high since only when the lesions are recalcitrant does the patient apply for treatment.

			Percentage
TRAUMATIC:			
a. scabies, pediculosis	43	6	14
b. garters, rings, trusses, belts, etc	16	2	12
PLANT TOXINS	56	2	4
CHEMICALS:			
a. soap	..	..	..
b. hair dye	7	2	28
c. clothing dyes	1	0	0
d. fur dyes	9	3	33
e. occupational irritants	102	19	19
f. actinic rays	27	0	0
CIRCULATORY DISTURBANCES:			
a. frost bite	7	1	14
b. varicosities	22	16	73

That eczema frequently develops as a sequel to scabies and pediculosis is a well known fact. That it sometimes persists indefinitely after the apparent cause is removed is also common knowledge. However, it will be noted that only fourteen per cent. of patients affected developed eczematous lesions from this cause.

The local application of certain drugs and chemicals is irritating to some skins, while innocuous to others. In some industries chemical irritants give rise to a mild dermatitis in some workers, and in others a deep vesiculation, resulting in an eczema of many months' duration. On the contrary, many workers are exposed without any deleterious effects whatsoever. The following case is illustrative:

Case.—A. C., a woman, thirty-two years of age. Previous history of no consequence. About February 1, 1924, she applied one of the commonly advertised analgesic salves to her chest and neck for a bronchitis. She repeated this several times during the day, and later noticed a reddening and burning of the skin. This gradually spread in spite of soothing applications, vesiculated, and became very pruritic. In the course of a month it had extended to her face and shoulders, and down as far as her waist line. I saw her about a month later and she had a well developed eczema covering the above mentioned regions. Inquiry of the manufacturer revealed that of millions of sales, he had had only six complaints in which a severe dermatitis had followed the use of the remedy. In conclusion, we may say that in view of these facts the external irritant acted in this case merely as an excitant.

Of the many people using paraphenylenediamine hair dye, in only a few does a true eczema develop. I recall only two or three cases that I have seen in which the mild dermatitis produced did not clear up quickly. However, in some cases a persistent eczema does develop, which although amenable to treatment shows a tendency to relapse, long after the dye has been washed from the hair.

The development of eczema as the result of irritation of various dyes used in the manufacture of clothing, hats, furs, etc., is familiar to us all. However, Roxburgh (6) points out that but a small percentage of dyed fur wearers suffer from dermatitis, and a still smaller percentage suffer from eczema. Also, the length of time for which the furs are worn before the appearance of the rash varies from two to

twenty weeks. He believes the condition may be akin to a developed sensitivity.

The forms of eczema due to varicose veins and associated with dry skins deserve only passing mention.

H. Jaeger (7) reports a number of experiments to ascertain whether eczematous patients react differently from those of normal skin to external agents. One hundred and forty patients with healthy skins were used and seventy-seven with eczematous lesions of different types. They were all subjected to the same routine. Only four per cent. of the skins of normal people showed any reaction to the external agents used. On the other hand, in fifty-one per cent. of the eczematous patients new lesions developed on the irritated area indistinguishable from acute vesicular eczema. He concluded that this susceptibility was due to a "tissue idiosyncrasy," and not to a humeral defect or internal dysfunction.

In conclusion, we can say that external irritation alone is not a sufficient cause for eczema. That of the number of persons exposed to the various irritants mentioned as the sole causative factors, only a few exhibited the disease. It is necessary that some underlying pathology exist that produces what we are pleased to call a susceptibility or eczematous diathesis.

Alleged Internal Causes of Eczema

1. digestive disturbances

It is true that in many patients exhibiting eczematous lesions there occur digestive disturbances. In the majority of cases I have found a hyperacidity of the gastric secretion and a hypotonus of the bowel accompanied by flatulence and indicanuria. However, we find hyperacidity in many other dermatoses and in patients exhibiting no dermatological lesions whatsoever. Furthermore, patients may have eczema for years without the digestive apparatus furnishing any perceptible symptom to the patient.

According to Ehrman, the mechanism of eczema may be explained by the hypothetical absorption in the gastrointestinal tract of relatively large protein molecules which are irritating to the skin papillæ and result in simple exudation. Local toxemia results in sensitization, and a slight external stimulus is then all that is necessary to produce a typical eruption of eczema. This explanation is rather fanciful and bears little clinical confirmation. Urbach (8), in a series of 182 eczematous patients, demonstrated a majority with hypoacidity. This would tend to substantiate a deficiency in protein digestion. However, I am of the opinion that gastric hyperacidity is far more common.

In conclusion, we can say that correction of the gastric disturbances only rarely results in curing the eczema, and it therefore cannot be considered as the etiological factor.

2. disturbed metabolic ratio

Perhaps no other cause has been held responsible for eczema so frequently as a disturbed metabolic ratio, that is, an ingestion of an excess of fats, carbohydrates or proteins.

As regards the fat and carbohydrate metabolism, there is no evidence that they are particularly involved other than in infants, and then only as a contributory factor. Pulay (9) reported a hyperglycemia in a large number of cases which he considered increased the sensitivity of the skin to light. McGlasson (10), in an exhaustive paper on hyperglycemia, considered it only as a contributory factor in some eczemas, and did not find it present with sufficient regularity to consider it of great etiological import. It is true that lesions occur quite frequently in diabetics; but on the contrary many patients with a high blood sugar and glycosuria never present a dermatosis of any character whatsoever.

In reference to the protein metabolism, a large percentage of eczematous patients exhibit a hyperuricemia. This is particularly true of those between forty and sixty years of age. This is quite normal for patients at this time of life. Severe eczemas in children have also shown a slight increase in uric acid. I am of the opinion that this is the result of the eczema, due to absorption of the protein exudate. Similar increases are occasionally noted in absorption of pleuritic effusions and transudates. On the other hand certain eczemas are favorably influenced by treatment directed toward the relief of a uricemia.

As regards the metabolism of the inorganic salts, I know nothing other than that there seems to be no disturbance of any constancy of the chloride, sulphate, and phosphate ratio in the disease.

In conclusion, we may say that as regards the metabolic ratio in eczema, there are no changes that occur with any regularity. However, changes brought about by other internal diseases which may vary the blood chemistry may have such an effect upon the skin as to favor the development of the disease.

3. food allergy

An attempt has been made to link eczema with urticaria as a manifestation of food sensitization. This sensitivity is quite common as the apparent cause in infants, but less so in adults. In infants I have found egg to be the most common offending protein. Wheat is also the cause in a large number of cases. Quite often we find a combination of two or more proteins causing the sensitivity.

The following case is illustrative of evident sensitization:

Case II.—C. H., aged two and a half years, had suffered since the age of four months with eczema, which, though at no time very severe, was annoying and persistent, especially over the flexures of the joints, buttocks and face. Periodically, the child would be thrown into an asthmatic attack, particularly when it had contracted a cold, the attacks lasting from fifteen minutes to several hours. Concomitant with these attacks there was an exacerbation of the eczema. In March, 1922, cutaneous tests showed the child sensitive to egg and potato. Withdrawal of these articles of food resulted in complete recovery. I saw the child a year later and it was in perfect health. Whether it is able to partake of these foods at the present time I do not know.

Abramowitz (11) recently reported a case due to the protein emanation of chicken feathers, which cleared up promptly on desensitization.

The manner in which these proteins act is still problematical. It is probable that they effect an irritation of the vagotonic nerves, producing circumscribed areas of capillary dilatation producing pruritus. The trauma resulting from the scratching of the lesions and a local anaphylaxis may be sufficient to

produce the eczema. Most of these eczemas resulting from protein hypersusceptibility are dry, papular and do not vesiculate. Many of them may be classified as neurodermitis. Wise and Ramirez (12), in a recent paper reported several cases of neurodermitis apparently caused by ingested proteins.

Bacterial proteins have been held responsible for eczema in the same manner. I have never had a patient give a positive reaction to a bacterial protein who improved upon vaccination with the same.

In conclusion, we may say that eczema appears as one of the manifestations of protein hypersusceptibility; that it appears as a developmental or evolutionary manifestation of cutaneous irritability; that it occurs in relatively few cases, and therefore cannot be considered to hold the same relationship to allergy that is occupied by urticaria and other manifestations of anaphylaxis.

THE ENDOCRINE GLANDS

In consideration of the relation of the endocrine glands to eczema we are necessarily working on entirely empiric grounds. We are all familiar with the effects of lactation, pregnancy, the climacteric and puberty upon cutaneous diseases. I consider this effect to be brought about by certain variations in the equilibrium normally maintained between the vagotonic and sympatheticotonic nervous systems. The impulses proceeding from their opposing fibres control the vital processes of the body. They are responsible for the secretory and motor abnormalities of the gastrointestinal tract, for the manifestations of anaphylaxis, for disturbances in the metabolic ratio evidenced through the blood, and other pathological conditions advanced as etiological factors in the production of eczema.

However, the endocrine glands constitute only one factor in maintaining this balance of nerve control, and therefore can be considered only as a contributory cause of the disease.

CONCLUSIONS

1. External irritation alone is not a sufficient cause for eczema.
2. In those cases in which external irritation is the sole apparent cause, a parasite is probably present, and we are dealing with a noneczematous lesion.
3. The most reasonable cause for the disease lies in a lack of balance in the autonomic nervous system, associated usually with an external exciting factor.
4. The internal treatment of the disease should be along lines tending to restore this balance to normal, rather than by measures directed toward the correction of the various manifestations of vagotonia and sympatheticotonia.

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80 WEST FORTIETH STREET.

The Endogenic Nature of Some Skin Diseases*

Critic of Bloch's Review of Skin and Metabolism

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The old humoral theory of the origin of skin diseases that cover the entire body has been displaced by the advance of cellular pathology. Only in the last decade have the results of the investigation on immunity led to an appreciation of the origin of hypersensitiveness, the allergy and the sensitization of the skin, and also showed the similarity of these affections with the skin symptoms of serum disease and anaphylactic shock.

The complex of the skin diseases, which can be traced to a hematogenic influence of certain noxa, is not due to any uniform, but to a polymorphous disease (pruritus, urticaria—lichenification and the development of eczema). The tormenting itching and the vegetative nervous stigmata are to be emphasized as the common symptom. The effects of diseases in hypersensitiveness of the skin are characterized by Brocq as the *réaction cutanée*.

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In a large group of neurodermatoses the toxic effect of albuminous bodies (decomposition products of the albumin in the food) constitute the central point of the attempts at explanation. The constant entrance of alien albumin into the blood stream provides a latent tendency to disease, which leads to the outbreak of the disease from various causes.

Many years ago I advanced the etiological relationship between anomalies of the metabolism of albumin with this group of diseases. The increase in the ether sulphates and the aromatic products of intestinal decomposition were regularly present. The treatment recommended was partly intestinal antisepsis with drugs (menthol), but especially a change of the intestinal flora by means of food rich in carbohydrates and poor in albumin, by means of which the substances causing fermentation displace the germs of decomposition. The relief of obstipation is also an important byproduct.

Later on, secretory disturbances of the stomach

(Ehrman and others), pancreatic hypocholia, and other conditions were made responsible, but in the final effect the resorption of toxic albuminous bodies was decisive.

One can postulate special conditions for the penetration of the intestinal wall by intestinal toxins. Often the conditions are such that anacidity and achylia lead to hypermotility in the upper intestinal tract and also to stagnation and rectal obstipation. The toxic products of intestinal putrefaction are taken directly to the vena cava by way of the lymphatics and venous plexus and thus escape the detoxicating liver. In addition to the correction of the gastric digestion and to the intestinal antisepsis, the thorough treatment of the rectal obstipation requires the greatest attention. The most important feature is the administration of food poor in albumin.

In addition to clinical signs, a definite retention of bilirubin was found in the blood in a large group of cases as a symptom of insufficiency of the liver or an inferiority of liver function. In this condition a chronic ascending colon bacillus infection, or a latent disease of the biliary passages and disturbance of the liver function with its consequences in the skin and in the parasympathetic system, may exist.

In anaphylactic shock, as it may be produced by the antigen of the nutritional albumin, there may also appear demonstrable changes in the liver (E. P. Pick and Mautner). The author recommends treatment that stimulates the liver and biliary secretion (magnesium sulphate, formaldehyde, biliary acid preparations, and urotropin) for the syndrome of hepatic injury and dermatoses.

In four cases the intravenous administration of calcium produced a good effect through its general action upon the bloodvessels and the sedative effect upon the parasympathetic system.

Some dermatoses of endocrine origin in menstruation, pregnancy and in the climacterium (explained by the loss of the ovarian function or resorption of toxic products from the placenta) may also be mentioned. Some time ago, after an anatomic study, I explained the diffuse sclerodermia by a loss or a dysfunction of the thyroid gland, and was the first to recommend thyroid gland medication in this disease. Since then many others have carried it out. Sclerodermia is not always of purely thyrogenic nature, and examples of pluriglandular functional disturbances are well known. The combination of loss of ovarian function and disturbance of the thyroid gland is not rare, and, according to my experiences, the combined treatment with the corresponding organic preparations often shows surprising results.

The proof of the endogenic nature of some dermatoses still requires additional support. The path, which has in recent times been followed along the lines of microchemical study of the blood, promises further explanation.

The Response of the Skin to Systemic Affections*

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The human economy can be readily compared to a democratic government of the highest order. Each cell of the body, regardless of its situation, position or function, is considered a respectable and desirable citizen. Some cells are endowed with the power of intellect. They are placed in the anterior cranial fossæ to perform the metaphysical duties of this miniature government. Other cells possess the power of commanding and execution. They constitute the motor area of the brain. By means of the sensory and motor nerves, this executive chamber is in constant telegraphic connection with every group of cells of the body to receive impressions and administer orders suitable for the welfare of the economy at large.

The gastrointestinal tract, its accessories, and the glands of internal secretion are the various factories in which raw material is converted into food and other necessary articles to sustain the supply of energy requisite to the maintenance of the body.

The circulatory apparatus constitutes the transportation system of this government. By means of the bloodvessels and lymphatics the manufactured articles are carried from the factories direct to each cell. Nature has no use for intermediate agencies.

The phagocytes are performing the police duties. Ventilation is accomplished by the respiratory system and the cleaning department is invested in the excretory glands.

The wonderful architect of this prodigious organism believed in being prepared against a sudden attack of an unexpected enemy. He, therefore, established a standing organized army of cells on the boundary line of this government, known as cutaneous tissue, the chief function of which is protection. These cells have also the function of regulating the body temperature. Similar to a state militia, which is trained for the internal defense of a state against any hotheaded mischief makers.

The skin is also charged with the work of export and import: elimination and absorption.

This short introduction is sufficient to indicate the intimate relationship of the skin to all other organs of the body and the evident deduction that affections originating in the body will exert their influence upon the skin. An army may suffer much by fighting a strongly resisting enemy, but suffers most by lack of ammunition, food, clothes, hygiene and discipline.

The subject that I am about to discuss in this article is an exceedingly difficult one. The difficulty is due to two factors: first, many lesions of the skin show no apparent affections in the system and many affections of the system show no apparent lesions in the skin; second, almost every specialist considers der-

*Read before the Southeastern Branch of the Philadelphia County Medical Society, November 5, 1925.

matology a subject not belonging to his domain and pays very little attention to it. Even the general practitioner in his observation by inspection has in his mind only: to investigate any inequality of expansion of the chest; projection of one or both scapulæ; the presence of lateral curvatures; differences in the size of the lateral halves of the chest, etc. He observes the skin only when he has a suspicion of typhoid fever, measles, scarlet fever and other diseases characterized by definite eruptions. He makes no effort, while establishing a diagnosis of any systematic disorder, to examine the skin *per se* in order to correlate and associate any abnormalities found with that particular systemic disease. One must remove the imaginary lines of "specialties" which have been erroneously placed in the mind of the medical profession. He must study the human body as an indivisible unit. He will probably, then, agree that the skin is the most reliable indicator of the general condition of the body.

To discuss the title of this paper intelligently we must divide the subject matter into four classes.

Class A: Abnormalities of definite character in the skin associated with systemic disorders.

Class B: Abnormalities of definite character in the skin with assumed systemic disorders.

Class C: Abnormalities of definite character in the skin with no apparent systemic disorders.

Class D: Systemic disorders of definite character with an apparently healthy skin.

To describe each class fully in the limited space of an article is a matter of absolute impossibility. The author will, therefore, confine himself only to a few examples of each class with the hope that the reader will have sufficient evidence to judge upon the rest.

Class A

COLOR OF THE SKIN

1. *Pale skin.*—This usually indicates insufficient nourishment. It is generally noticed in cardiac insufficiency. It may indicate spasm of the arterioles, a decreased number of red blood cells, or a deficient amount of hemoglobin. If it comes on suddenly, internal hemorrhage may be suspected. The pallor of the skin is at times waxy in character as in nephritis, pale yellow in color as in carcinoma, ashy gray as in Asiatic cholera, or yellowish green as in chlorosis.

2. *Redness of the skin.*—This may be physiological in character as in those individuals who possess a florid complexion. The act of blushing is also a normal process. Exposure to heat or cold will manifest itself by unusual redness. A pathological diffused redness may appear after ingestion of certain drugs of the solonacea species. Anaphylaxis will give rise to redness symmetrical in distribution, known as erythema hyperemica. Local areas of redness are quite characteristic. We notice redness of one cheek in pneumonia, a flush upon both cheeks in tuberculous conditions, a dusky redness on the face of alcoholics, and the limited red areas on the nose and cheeks indicative of obstructed portal circulation.

3. *Blue or purple skin (cyanosis).*—An army may be deprived of ammunition due to one of four factors: first, defects in the transportation system; second, inability of manufacturing arms; third, adulterated material which renders the ammunition worthless; and fourth, impossibility to obtain raw material.

Examples of the first factor are any interferences with the circulation. A localized obstruction of the venous trunks of the extremities or any part of the body will produce a local cyanosis. The same is true when there is interference with the circulation of the capillaries of the lungs as in pleural effusion, pulmonary tuberculosis, or high grade emphysema.

Examples of the second factor are all the causes which are lessening the breathing surface. Occlusion of the alveoli by exudation or compression from the outside, such as pleural or pericardial effusion, hydrothorax, thoracic tumors and changes in the epithelial cells of the alveoli, will lessen the breathing.

Examples of the third factor are conditions occurring when an overdose of the coal tar products is taken or drugs which cause chemical changes in the blood, such as, hydrocyanic acid, calcium chloride, and similar drugs.

Examples of the fourth factor are those conditions which are hindering the admission of air into the lungs. Laryngeal diphtheria, edema of the glottis, foreign bodies in the upper air passages, paralysis of the muscles of respiration and drugs that depress the respiratory centre such as opium and its derivatives.

4. *Icterus.*—This is an index finger pointing to the right upper quadrant. The color of the skin usually differs from a slight lemon yellow to a brownish yellow or saffronlike tint. The change in color is first noticed in the conjunctivæ. This fact is made use of in differentiating the yellow color of jaundice from the yellowish color in chlorosis, malignant tumors, malarial cachexia, renal cirrhosis, lead poisoning and the temporary yellow color of the newborn.

5. *Bronzing of the skin in Addison's disease.*—This change in the color of the skin results from a definite systemic disorder. This brown or brownish black discoloration is due to a deposition of pigment in the deeper layers of the skin and mucous membrane.

TEMPERATURE OF THE SKIN

A cold skin occurs in all chills and rigors. It is usually associated with a poor capillary circulation. A cold skin should not be considered as an index of the internal temperature. During the stage of the chill of intermittent malarial fever, the cold skin is accompanied by a very high internal temperature. Local coldness of a surface may be due to vasomotor spasm, arterial or venous thrombosis, or any other obstruction of the circulation. A general hot skin usually exists in fevers, but it is not always so. A local area of heat indicates that some irritation has produced a vascular dilatation at that particular place.

MOISTURE OF THE SKIN

To perspire after exercising in warm weather is perfectly normal. It is also natural to sweat after hot baths, hot drinks, or strong mental emotions. Therefore, in the study of sweating as an indication

of systemic disorder, these conditions must be excluded.

An increase in perspiration indicates a weak infectious system. The night sweats of tuberculous patients, the cold perspiring skin in states of collapse, the profuse sweating at the crisis of lobar pneumonia, and the sweating in malaria may serve as examples to this statement.

Local sweating such as is noticed in bromidrosis, which is limited to the hands or feet, is a sign of general debility. Sweating of the head only is seen in rachitis. Unilateral sweating of the face or head is of purely nervous origin. It is observed in neuralgia, migraine or other nervous disturbances.

On the other hand, a decrease in perspiration is noticed in high temperatures, in increased elimination of the kidneys, bowels or stomach. It may also be seen when the skin is stretched or altered in character so as to hinder the cutaneous circulation; such is the case in anasarca or myxedema.

PURPURIC ERUPTIONS

Petechiæ and ecchymoses may be of the nature of infarctions due to lodgment of septic emboli in the arterioles, as in malignant endocarditis, septicemia and pyemia. The latter two diseases may also be accompanied by pustules, vesicles, ecthyma and papular rashes.

Purpura may also be the consequence of changes in the blood as in pernicious anemia. It accompanies infectious diseases: typhus fever, cerebrospinal fever, smallpox, bubonic plague, and all the exanthemata.

Purpuric eruptions may be produced by a number of drugs such as copaiba, quinine, belladonna, mercury, ergot and the iodides, particularly potassium iodide.

A great number of primary and secondary lesions of the skin point directly to definite systemic affections but for lack of space, I shall mention only a few examples. All the characteristic eruptions of the exanthemata, the rose spots of typhoid fever, piliosis rheumatica in acute rheumatic fever, the characteristic lesion of leprosy, the great variety of lesions known as syphiloderma due to the treponema pallidum, the pruritus pudendi, boils, and carbuncles of diabetes mellitus, the cutaneous lesions of sporotrichosis, and the herpes in pneumonia and influenza.

Class B

In this class we include abnormalities of definite character in the skin with assumed systemic disorders.

ECZEMA

Eczema occupies a considerable space in the domain of dermatology. It constitutes about thirty-five per cent. of all skin affections. It manifests itself in almost all the primary and secondary lesions. It is essentially an inflammation, nonbacterial in origin. The pyogenic organisms which produce the pustular eczema are merely uninvited guests that partake in an already prepared feast by the previously formed vesicle. All eczemas are primarily a dermatitis.

Two factors are taking part in producing this disease. An external irritant which may attack either skin or mucous membrane and a systemic predisposing factor which inhibits the reaction of the body. Whatever the irritant might be—chemical, mechanical, thermal or undigested food—it is not of itself capable of producing eczema. The dermatitis would have had a short life were it not for the systemic predisposition which has established a least resistance allowing thereby the irritant to progress until it forms an eczema. The very fact that many persons may be subjected to the same irritant and only a few manifest the eczematous eruption proves this statement to be correct.

URTICARIA, ERYTHEMA MULTIFORME, AND ANGIONEUROTIC EDEMA

These skin affections are said to be due to anaphylaxis. Fordyce, McBride, Schorer, Strickler, Sutton, and others believe that certain foods, drugs, or foreign proteids in the form of serums, when introduced into the system of certain individuals will lead to the formation of albuminoid bodies capable of producing the particular irritation. Here again it is reasonable to assume that there must be a predisposing factor in the system of those persons which prevent their bodies from counteracting the production of this irritant.

PELLAGRA

Every dermatologist believes that pellagra is a systemic disorder which manifests itself upon the cutaneous surface in a systematic distribution. The sites it selects are the dorsal surfaces of the hands and wrists, some parts of the face, scalp and neck. Until recently it was believed that this disease resulted from the ingestion of fermented maize. This has been disproved. Ormsby believes that it is due to infection of some living microorganisms. Goldberger's experimental studies prove that it is a result from insufficient proteid in the diet.

LICHEN PLANUS

This disease usually attacks persons of middle age. Children are rarely affected. Fordyce, Montgomery, Alderson and others believe that this is a systemic affection. It is probably due to nervous exhaustion.

PSORIASIS

At the present time the majority of investigators assume that this disease is due to a parasite, which invades the system. Strickler believes that psoriasis is caused by a spirochete, which is closely allied to the Treponema pallidum. He confirms his belief by the following three reasons: 1. The lesions of psoriasis tend to show central clearing similar to lesions of other bacterial diseases, such as pityriasis rosea, tinea circinata, and syphilis. 2. Psoriasis tends to recur most commonly along the lines of trauma the same as it happens in other bacterial diseases. 3. The lesions of psoriasis tend to recur because the spirochaete has not been eradicated from the system.

SEBORRHEIC DERMATITIS

This disease is said to be due to a combination of three microorganisms: Sabouraud's microbacillus, Unna's flashenbacillus and Unna's micrococcus.

HERPES SIMPLEX, HERPES ZOSTER AND POMPHOLYX

These diseases, which produce deepseated vesicles, are assumed to be of nervous origin. The irritant most probably acts on the prickle cells and liquefies them.

DERMATITIS HERPETIFORMIS

This is another disease which is believed to be a systemic affection with cutaneous manifestations. In this disease there is always an indicanuria and eosinophilia. Johnston believes that an autointoxication of the gastrointestinal tract is at times the predisposing factor.

VERRUCA

Verruca vulgaris and verruca juvenilis are the two common types. They are autoinoculable and are capable of reproducing themselves when planted on susceptible soil.

SCLERODERMA

This is assumed by the majority of investigators to be due to a trophoneurosis dependent upon changes in the central nervous system.

Class C

This class consists of abnormalities of the skin with nonapparent systemic disorders. In attributing skin diseases of this class to some defect of the system, I feel as one treading upon unsafe ground. For we are still in the dark as to the mission of the glands of internal secretion, we cannot definitely assign functions to all the varieties of the leucocytes, and we are ignorant of the variations under certain circumstances in the chemical composition of the lymph which is the sole nourishing agent of the epidermis. Yet, I am positive that every dermatologist, when confronted with a skin lesion of this character, feels that there is somewhere in the system a certain disorder which is the direct cause of it.

In the present speculative attempt to correlate a few diseases of this class with systemic affections, I must draw on the patience and sympathy of my readers, hoping that they will not perform an autopsy on the reasoning with their sharp, critical scalpels.

URTICARIA PIGMENTOSA

Under the microscope this disease resembles greatly the ordinary urticaria. The only difference is that, instead of the usual collection of leucocytes in the ordinary type, we meet here with an enormous infiltration of the basophilic leucocytes or mast cells.

It is, therefore, reasonable to assume that this disease is also due to anaphylaxis. The proteid, which becomes foreign in character by a faulty metabolism, may be acid in reaction. This excites the multiplication of the basophilic cells, which in counteracting or combining with the proteids, form the pigment.

GRANULOMA ANNULARE

This is a chronic inflammatory disease of the skin characterized by deepseated nodules which have a tendency to spread peripherally and undergo involution in the centre. Thus it forms a ring eruption.

Here again I will venture a speculation in saying that this is a parasitic disease due possibly to some fungus. We have learned that lesions due to bacteria have a tendency to central clearing. The reason for it is that the older settlers in the centre are gradually dying out, while their offspring at the periphery are still in active life. Granuloma annulare, having central clearing, is, therefore, due to a parasite. Another proof is the fact of its being sharply marginated. We know, that in fighting against a bacterial invasion, Nature makes an effort by means of leucocytes to form a barrier against the disease, in order to localize it and prevent its spreading through the system. This forms the sharp margin in all the other cases of bacterial infection. We have, therefore, a strong foothold to support the assertion mentioned above.

ICHTHYOSIS (FISH SKIN DISEASE)

Under the microscope we notice that the stratum mucosum is much thinner than normal. Its cells are flattened, the stratum granulosum is absent, and the stratum corneum is greatly thickened. We can readily see, then, that the viability of the mucous layer is very much below par. Its cells are dying right there without undergoing the normal cycle of cornification as is the case in a normal epidermis. Furthermore, cell destruction is going on so rapidly that there is no time for the stratum corneum to throw off the dead cells and so it remains thickened.

Since we know that the lymph is the only nourishing agent of the epidermis, it is reasonable to assume that a toxic element circulating in the lymph is the underlying cause of this disease. There is a great possibility that the toxin is produced by hypothyroidism because of the fact that thyroid extract administered to these patients greatly improves their condition.

Other diseases such as keratolysis, xanthoma, lichen nitidus, pityriasis rubra pilaris, acanthosis nigricans, etc., can be logically traced to systemic disorders, but for fear of drawing too much upon the patience of the reader, I will consider the three examples cited above as sufficient for this class.

Class D

This class consists of a great number of systemic diseases in which there are nonapparent disorders of the skin, and, therefore, forms the bugbear to the idea which is expressed in the beginning of this article, namely, that all systemic affections must of necessity have their influence on the skin.

Our knowledge at the present time of the gross pathological manifestations of the skin is limited to the primary and secondary lesions only. When the naked eye cannot detect any of these lesions, we are inclined to consider the skin as normal. The physiologist has not as yet given us a standard definition of what constitutes a perfectly healthy skin. Therefore, the tracing of skin pathology in such diseases as bronchopneumonia, whooping cough, bacillary dysentery, Malta fever, tetanus, actinomycosis and relapsing fever is beyond our power.

In ancient times, when the practice of medicine was exclusively in the hands of the priests, dermatology was considered the chief study of medicine and inspection was the only method of procedure in diagnosing diseases. The Bible contributes a whole chapter to the study of dermatology (Leviticus, Chapter XIII). The priest is ordered to observe the change of color of the skin to white or reddish white, to change of color of the hair to white or yellow, to look out for atrophic changes, and to watch the distribution of these pathological manifestations. The Talmud, commenting on the change of the skin to

white, mentions four white colors: snow white, white wool, white cement and egg shell. To differentiate the various shades of reddish white, the Talmud advises to take four glasses of milk and put two drops of blood in the first glass, four drops in the second glass, eight drops in the third, and sixteen drops in the fourth glass. Acabia, the son of Mahalallel, was able to recognize seventy-two different shades of abnormalities in the skin. (Talmud—Negaim, fourth tractate of Tohorath.)

This fact is mentioned to prove how skillful they were in those days in using their only method of observation by inspection. The wonderful progress which the medical profession has made since those days in diagnosing diseases by means of palpation, percussion, and auscultation, has placed inspection in the background. There was no necessity any more to strain the eyes and develop the skill of inspection. So, while we have progressed in one way, we have regressed in the other and we are looking now at the skin as at a sealed book, which cannot be read because it is sealed.

Yet, there is one fact that cannot be denied and which speaks for itself, namely: when we examine the skin of almost ninety per cent. of our patients who suffer from any systemic disease, we do not find it in good condition, though we cannot lay our finger upon any definite pathological defect.

The following interesting fact will indicate the importance of examining the skin *per se*, and the benefit that may be derived from it. For many years I was connected with the late Dr. A. Rivkees, one of the chiefs of the Eagleville Hospital and Sanatorium for Chest Diseases in Philadelphia. Our duty in this institution was to examine cases of incipient tuberculosis. In almost seventy-five per cent. of the cases we noticed an acniform eruption situated on and between the scapulæ. They vary from only a few lesions in one case to a considerable number in others. They are papular in character and differ from acne vulgaris in not being deepseated, nonfollicular and unassociated with pustules. There are no comedones, and the face is usually exempt. We have discussed this eruption and though it cannot be pronounced as pathognomonic of incipient tuberculosis, yet it is felt that its presence is more than incidental.

We are inviting the attention of the profession at large and particularly those who study the chest, to participate and express their opinion.

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Trichophytosis of the Glabrous Skin as a Clinical Problem

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Trichophytosis as a clinical problem came to the front only at a recent date, though bacteriological data on it were published as early as 1870 by Tilbury Fox. Later, Pellizari, in 1888, and particularly Djelaleddin Mouktar, in 1892, presented a comprehensive study on the dishydrotic type of ringworm. Castellani, in 1905, proved that dhobie itch was caused by trichophyton cruris, and in 1907 Sabouraud established the identity of epidermophyton inguinale. Yet it was not until a clinical study of it by Ormsby and Mitchell in 1916 (1), and later by Charles White (2), Greenwood and Wende (3) that dermatologists of this country began to take interest in trichophytosis. Since then trichophytosis as a clinical problem has steadily grown in importance and popularity among dermatologists.

This paper is limited strictly to trichophytosis of the glabrous skin. For this reason the infection of the scalp and nails will not be included. It may be remarked here that while bacteriologically there is a difference between trichophytosis and epidermophytosis, clinically they can not be differentiated; hence these terms can be considered interchangeable.

PREVALENCE AND DISTRIBUTION

The enormous prevalence of the various types of trichophytosis is not realized by the general profession. It is safe to say that trichophytosis at present makes up a considerable percentage of dermatological practice. Hazen (4), of Washington, D. C., states that trichophytosis makes up about ten per cent. of all cases in his private work. Michaels (5), of Dallas, Texas, estimates it as high as fifty per cent. Obviously, regions of warm climate will show a higher incidence of mycotic infection than cold. It is also obvious that many times more thousands of cases of trichophytosis do not reach trained dermatologists and masquerade under the names of systemic and occupational eczemas, intertrigos, etc. Still, other thousands of trichophytosis cases of low grade activity do not cause any annoyance or distress to their hosts and for this reason do not reach any medical adviser at all until a spell of hot weather or some other accidental factor brings out an acute exacerbation which forces the patient to seek medical relief.

The enormous increase in the number of trichophytosis cases in recent years is both apparent and absolute. The first is due to better means of diagnosis and early recognition as a result of the latest increase of knowledge of clinical types of trichophytosis; the second is to be attributed to the steadily growing social factors favorable to incubation, dissemination and persistence of trichophyton infection, such as social and athletic clubs, swimming pools, wearing

of wool and flannel shirts, suits and sweaters, woolen socks, unhygienic modern footwear, popularity of pet animals, etc. Thus, it can be said that trichophytosis is, to a large extent, a disease bred by civilization and, accordingly, can be best controlled by the measures of social hygiene.

SOCIAL IMPORTANCE OF TRICHOPHYTOSIS

The importance of epidermophytosis as a social medical problem is not realized by either laymen or the profession, largely because of its habitually chronic nature, and only occasional attacks of acute distress and disability; also because so many cases are not recognized as fungoid and credited to other pathogenic factors. Should it ever be possible to make a clinical and bacteriological survey of various parts of the population, a condition of epidemic, if not endemic, infection might be revealed.

If the collective total of distress, occupational disability, and financial loss caused by the various types of trichophytosis could be determined and expressed in statistical units, trichophytosis as a social medical problem would command the attention of the profession and workers of public health. Hazen, of Washington, D. C., deserves credit for being one of the first men in this country to emphasize the social importance of trichophytosis.

CLINICAL IMPORTANCE OF TRICHOPHYTOSIS

Clinically trichophytosis is also of great interest and importance for two reasons. First, because in spite of intense interest and study of trichophytosis in recent years in dermatological circles and the resulting increased clinical knowledge of the subject, the general profession remains strangely uninformed and continues to grope in the dark in regard to the diagnosis of this so widely disseminated mycosis. On the other hand, in spite of the tremendous gains in clinical understanding of trichophytosis dermatologists have not obtained a complete clinical control of this mycosis. It is a peculiar and at present rather unexplainable fact that an apparently purely local and superficial mycotic infection should be so resistant to local powerful antiseptic applications and show such a remarkable tendency to recurrence. This is particularly true in regard to the plantar and palmar types of trichophytosis. This weakness of the therapeutic end of the problem renders trichophytosis of acute interest to dermatologists as well.

CLINICAL VERSUS BACTERIOLOGICAL POINTS OF VIEW

The purpose of this paper is to emphasize the clinical point of view in contradistinction to the bacteriological. This seemingly onesided and narrow attitude is prompted by a desire to protest against a growing tendency among some dermatologists to lay undue stress on the bacteriological findings to the point of ignoring clinical data. To restore the proper balance between and the proper valuation of these points of view it seems to me would be of great service to the great body of general practitioners. Overemphasis of bacteriological findings in trichophytosis, if unchecked, may lead to the same disastrous results that the blind worship of the Wassermann test has done in regard to the clinical diagnosis of skin syphilis. The general practitioner, not encouraged to make a diagnosis on clinical data, loses all incentive and acumen for clinical observation and turns into a mere recorder of laboratory findings unable to interpret correctly his clinical observations. Such a situation is not warranted by the facts in the case. The bacteriological test is pathognomonic and conclusive, if positive, but it is not conclusive in negative aspect and it can not be used as a final diagnostic test even with the most expert technic.

Thus Hulsey and Jordan (6), of the University of Pennsylvania, in 1924, in examining the toes of one hundred students, found seventy-seven cases clinically positive. Of these fungus was demonstrated microscopically in forty-nine cases, or sixty-three per cent., while twenty-eight or thirty-seven per cent. were negative. Charles White, of Boston, in 1919, in reporting a large series of trichophytosis cases frankly admits his failure to corroborate his clinical diagnosis by microscopic and cultural findings. White concludes that he still must rely on clinical and therapeutical evidence.

James Mitchell (7), of Chicago, in commenting on White's report, states that the technic of bacteriological diagnosis of trichophytosis is tedious and requires infinite patience. In a later communication Mitchell specifically warns against mistaking intercellular spaces for fungi, which error, Mitchell states, is made with a surprising frequency by inexperienced workers. Wende (3), of Buffalo, in 1921, reporting a clinical and bacteriological study of thirty-seven cases of dermal scaling, concludes that clinical recognition of trichophytosis is fairly easy.

Thus it can be seen that under the very best circumstances the bacteriological diagnosis may be hard in many cases and in some cases unobtainable.

Aside from the technical difficulties of fungus search in individual cases it is a physical impossibility in countless thousands of trichophytosis cases to find facilities for bacteriological diagnosis. It is obvious that the bulk of these cases will have to be handled by general practitioners on clinical data only. This being the case it would seem to be rather a mistake to discourage clinical diagnosis by exaggerating its difficulties and to proclaim the dogma of the indispensability of bacteriological diagnosis.

It would be more productive of results to encourage clinical diagnosis by portraying the various clinical types of trichophytosis and outlining the differential diagnostic features. Such clinical portrayal, in my opinion, is perfectly possible. I believe that various clinical types of trichophytosis present well defined morphological entities and that in spite of superficial resemblance to various dermatoses a careful analysis of morphological details allows positive clinical diagnosis with a range of mistakes not greater than that incurred by bacteriological examination. Bacteriological examination is desirable and should be made whenever possible for completeness of the scientific record; in selected doubtful cases it may be even an absolute necessity, but for practical clinical purposes in the great bulk of typical cases (and such are the majority) it is unnecessary and can be dispensed with, just as microscopic demonstration of streptococci can be dispensed with in the average case of impetigo.

CLINICAL TYPES OF TRICHOPHYTOSIS

Clinical types of trichophytosis have been well described by various writers and to do it here again

is unnecessary. In my experience the most common variety of all is the intertriginous trichophytosis of the toes; next in frequency are the vesicular and scaly lesions on the soles of the feet; then the scaly type of tinea cruris; then the vesicular dyshidrotic lesions on the fingers and the scaly palmar cases, and the rarest of them all, the keratotic plantar cases.

It is rather strange that the literature does not mention one type of trichophytosis which I have seen repeatedly, that is, the multiple disseminated type, consisting of a number of small round and oval patches involving mainly the trunk, arms and thighs.

I have no personal experience with the lichenoid type of trichophytosis mentioned by some writers. I have seen repeatedly in cases of tinea cruris typical marginated scaly patches clear up and be followed by smooth lichenoid patches of similar size and shape. It is not clear to me whether these patches are a primary lesion caused by fungus or a secondary lichenification due to rubbing and scratching.

DIFFERENTIAL DIAGNOSIS

It has been asserted recently by several writers that the clinical differentiation of the dyshidrotic and scaly types of trichophytosis from dyshidrosis and eczema is practically impossible without microscopic demonstration of the fungus. This attitude seems to be too extreme and in my opinion is not supported by clinical facts.

DYSHIDROSIS VERSUS TRICHOPHYTOSIS

Let us consider first the question of dyshidrosis. The bacteriological demonstrations of fungi in many cases of dyshidrotic appearance have carried many observers to a sweeping statement that dyshidrosis, as heretofore described, as an independent clinical entity, does not exist, and that all cases of dyshidrosis are caused by the trichophyton fungus. In my opinion, a careful analysis of the morphological features and clincal symptomatology is sufficient to refute this extreme opinion.

Let us remember first that dyshidrosis is often, if not always, associated with hyperhidrosis. It is but natural, therefore, that dyshidrotic, i. e., hyperhidrotic, skin offers an extremely favorable soil for the implantation of trichophyton fungus. This readily explains why trichophytosis is so often associated with dyshidrosis and why the morphological features of both conditions appear so often combined and intertwined.

On the other hand, let us remember the clinical picture of a clearcut uncomplicated dyshidrosis, e. g., pompholyx: it is a sudden development of deep sago-like vesicles, uniform in size, preferentially located in the interdigital spaces of the hand, ordinarily more burning than itching. These vesicles, as a rule, do not rupture spontaneously and are not broken open by the patient (because they are not itchy) and heal up by desiccation in a few days. These attacks recur just as suddenly at various seasons, with a perfect freedom from any lesions between the attacks. The condition commonly attacks an individual below par, neurotic or run down, and improves under general tonic régime without or with hardly any local treatment. The pompholyx practically clears up as suddenly as it comes and practically never leads to eczematization.

What a strikingly different picture from the deep and superficial vesicles of various sizes, developing gradually and spreading by extension on various parts of the hands and feet, vesicles which are invariably scratched open by the patient because of the intolerable itching, and leaving the familiar scaly edge of an "epidermal collarette." Almost invariably one sees besides vesicular lesions also typical marginated, scaly, sharply defined lesions often coalescing into eczematoid patches with a smooth, glazy, denuded surface. Compare the short selflimited course of pompholyx with the stubborn persistent course of the dyshidrotic type of trichophytosis, so resistant to all kinds of local medication and the clinical difference between two conditions should be sufficiently apparent to sustain the claim of duality.

ECZEMATOID TYPE OF TRICHOPHYTOSIS

In differentiating the eczematoid type of trichophytosis from eczema it is convenient to consider separately vesicular and squamous forms. In my opinion the main and essential morphological feature differentiating common eczema, whether of systemic or local origin, from an infectious or parasitic condition, is that eczematous papules or vesicles are never discrete, that eczematous patches have ill defined borders, irregular and indefinite shape, and show a constant tendency to coalesce into diffuse extensive areas. Whenever an eczematous patch assumes sharply defined borders, particularly circinate and gyrate shapes, it is a safe clinical indication that the lesion is caused by some bacterial or mycotic agent. I have no personal bacteriological data to confirm this statement, but it has been confirmed so many thousand times by the clinical course and therapeutic test that I am satisfied to regard it as a safe clinical maxim admitting very few exceptions.

On a careful analysis of morphological details the clinical differentiation between vesicular eczema and eczematoid ringworm can be made without much difficulty in a majority of cases. In a clearcut case of vesicular ringworm uncomplicated by secondary eczematization, or better say in the early stage of vesicular ringworm before the secondary eczematization has time to develop, the vesicles are large and deep and stay discrete, while eczematous vesicles are smaller in size, more superficial, uniform in size and tend to coalesce into diffuse illdefined patches. On being ruptured trichophyton vesicles dry up quickly showing the characteristic scaly edge while eczematous vesicles on being ruptured continue to exude serum indefinitely. This differential feature has been well emphasized by Kauffman Wolff, one of the earliest observers describing vesicular eczematoid ringworm. Furthermore, in ringworm together with the vesicular lesions one can always find the well known epidermal collarette and marginated scaly edges while true vesicular eczema ordinarily retains its type and very seldom shows a coexistence of vesicular and squamous types in one case. The localization alone in many cases can assist in differentiation.

Eczema has no preferential localization. Ringworm on the contrary has a strong tendency to selective localization. Thus on the hands it commonly attacks the interdigital spaces, the palmar surface of the fingers, and the palms, and very seldom extends beyond the wrist joint. Should even vesicular ring-

worm develop a secondary eczematization, on careful search one can always detect enough of the differential features cited above to recognize trichophytosis as the underlying etiological condition.

SCALY AND SQUAMOUS TRICHOPHYTOSIS

The scaly squamous type of trichophytosis offers still better opportunities for clinical differentiation. I should again mention the sharply defined borders and particularly the circinate or gyrate marginated edges which, in my opinion, are never found in plain eczema and definitely point to the parasitic origin of an eczematous looking eruption. Another important differential feature is that scaly eczematoid ringworm presents, as a rule, much less infiltration and a much smoother, often glazy, surface than squamous eczema.

The most pathognomonic feature I would consider is the socalled epidermal collarette, the marginate festooned edges with the upturned scales attached to the outer edge and free toward the centre.

Speaking generally scaly eczematoid ringworm presents a picture of peripheral exfoliation, while in eczema diffuse infiltration and exfoliation throughout the whole area of the patch are the dominant morphological feature. The selective localization of trichophytosis on the palms, feet, groins and axillæ offers additional diagnostic suggestions.

(To be concluded)

Dermatomyositis

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ETIOLOGY

Dermatomyositis is an acute or chronic disease characterized by nonsuppurative inflammation in many of the muscles, dermatitis and edema. In many cases the affection is fatal but there is also a benign form. The first cases were described by Wagner in 1861 and later by Unverricht and Hepp in 1887. Subsequently cases were reported by Jacoby, Lowenfeld, Levy, Koster, Pfeiffer, Lorens, Boeck, Strumpell and Senator. In 1905 Steiner collected from the literature twenty-eight typical cases of which seventeen were fatal. He has since published a report on additional cases. There is a hemorrhagic type of polymyositis described by Lorens, Thayer and others, in which the dermatitis is less marked. Senator described a syndrome which he designated neuromyositis. All of these probably belong in the same group.

The disease occurs equally in both sexes, rarely in children. It is more common during the winter months. No definite cause for the disease has been found but there are various theories as to its genesis. Some ascribe the disease to infection (enlarged spleen, fever and angina). Bauer found a pure culture of staphylococci in the muscles involved. Weisner found a streptococcus. Martinotti asserts he has isolated a specific organism which he calls the micrococcus polymyositidis. But Lorens believes that organisms can hardly be held responsible for the symptoms. Unverricht thought of a protozoon resembling the gregarina found in animals, on account of the similarity in the microscopic picture of polymyositis and that of gregarinosis in dogs and horses. Pfeiffer, however, has examined a number of cases but was unable to discover any protozoon.

Senator thought of a toxic theory particularly, because he observed a case which followed the eating of decomposed crab meat. Litten also thought of intoxication, since in carbon monoxide poisoning he found marked changes in the muscles resembling those of polymyositis. Lapine believed in a vascular process, and he therefore spoke of angiomyositis. There is some similarity between the changes in this disease and those found in Volkman's ischemic myositis. Kell has described a case following the ingestion of fish. Sick reported an epidemic occurring among nurses at the psychiatric clinic of Tübingen. Myositis may occur under circumstances similar to those which produce polyneuritis (e. g., measles, gonorrhea, acute rheumatic fever, tuberculosis, influenza, gastrointestinal intoxications). Both Gowers and Oppenheim believe that exposure to cold is often a factor in the etiology of this obscure affection.

At autopsy there is usually found a large flabby spleen. The other pathological changes are those in the muscles and in the skin. Examination of the muscle obtained on biopsy shows that the muscle tissue is edematous, light yellow or red in color. At times there is noted a peculiar streaking of the surface. The tissues are usually infiltrated and soft. The consistency varies. At times they are exceptionally firm (Wagner) at other times almost fluctuating (Unverricht). There is a characteristic inflammation together with degenerative changes in the muscle fibres and interstitial infiltration. Very often there are found perivascular infiltrations and at times microscopic hemorrhages. The muscle fibres themselves are edematous and between them are often found mononuclear or polynuclear leucocytes. There may be noted also granular or hyaline degeneration. In rare cases atrophy of the muscle fibres occurs. The vessels are usually injected. The subcutaneous tissues are saturated with yellowish serous fluid. Large or small hemorrhages may be found in addition to the changes described above. In the neuromyositic form we find also neural changes with interstitial degeneration and connective tissue proliferation.

SYMPTOMS

The disease begins usually with a prodromal period. There occur malaise, fatigue, vague rheumatoid pains, sleeplessness, loss of appetite and mild

digestive disturbances. These symptoms may last from one to three weeks. At other times the disease may begin acutely with painful muscles. The pain begins most frequently in the legs and soon makes walking difficult. It is as a rule severe and variously described as drawing or sticking. Soon local swelling is found in the muscles, together with stiffness and rigidity. Fever commences and this may last several weeks. The muscles of the calves usually show massive swelling. Later the quadriceps and gluteals are involved. The muscles at first feel doughy and the skin over them shows edema, which may be so extensive that the legs assume an enormous size. There is no edema at the wrist or ankles, thus excluding the edema of nephritis and cardiac disease. The edema as a rule does not pit on pressure and it is asymmetrical. There may be puffiness of the face very much as in trichinosis. In cases of thoracic involvement there may be dyspnea and even asphyxia.

The surface of the skin in the first few days shows a peculiar glistening appearance. We may find erythema, local redness, or an eruption resembling erysipelas or urticaria. There is as a rule no itching. The rash may resemble erythema nodosum and erythema multiforme. After the disappearance of the erythema, desquamation and pigmentation occur. At times the mucous membranes show similar phenomena (stomatitis and pseudoangina).

The edema persists and the muscle swelling may even increase. The limbs can no longer be moved actively or passively and contractures develop. The inflammation may extend to the muscles of the trunk. In fact, all of the muscles of the body may be involved, including the diaphragm, eye muscles and muscles of mastication. If the muscles of the larynx or the tongue are involved there may be difficulty in swallowing with disturbance in nutrition as a result. The heart muscle has been found involved (Brauer, Jolasse and Friedman). The countenance is frequently immobile, described as alabasterlike by Oppenheim.

Paresthesias occur in the limbs. At times excessive sweating is seen. In cases of neuromyositis, definite nervous phenomena, such as more marked paresis and sensory changes occur. Later, atrophy with reaction of degeneration may be observed. The deep reflexes are generally diminished. Bladder and rectal function are not disturbed.

The spleen is often enlarged and there are evidences of constitutional infection. The latter, however, are not constant and Schnell has described cases without any fever whatsoever.

PROGNOSIS

While many of the cases are fatal in three to four weeks, either through aspiration pneumonia or paralysis of respiration, in others all symptoms may disappear and recovery may take place after several months. In some cases the disease advances from muscle to muscle and leads to a long period of disability ending either in final recovery or death. One of Steiner's patients was a negro in whom the disease lasted over a year. He finally got well. In addition to these cases with protracted course, there is another group with intermittent character.

There is a type which may be limited to one extremity and may resemble plexus neuritis. Wertheim-Salomonson reported two cases in which the involvement was limited to the left arm, shoulder and left hand. The rapidly developing edema, doughy swelling of the muscles and marked desquamation, indicated a local polymyositis. After three months there was noted muscle atrophy with partial reaction of degeneration. At the end of one year there still was a definite atrophy of the arm. In both cases the rest of the body was free.

Death comes from asphyxia, progressive asthenia, aspiration pneumonia due to disturbances in deglutition or complications in the heart. It is interesting to note that in one of Oppenheim's patients a scleroderma developed as a sequel of the disease. Our patients showed similar changes.

DIAGNOSIS

The differential diagnosis between polymyositis and polyneuritis may be difficult. The electrical tests may help; while in myositis there may be diminution of response to faradism and galvanism there are no changes in the character of the contraction or the formula. If the reaction of degeneration is present, we must think rather of neuritis. In the latter, too, there are more sensory changes. Swelling of the muscles and edema of the skin is in favor of myositis. In some cases there may be a mixed syndrome (neuromyositis).

The disease must be further differentiated from trichinosis. The latter, however, is more apt to occur in groups of individuals. There are more gastrointestinal symptoms. The edema of the eyelids is more marked and the myositic changes are seen first in the masseters, temporals, muscles of the eye and of the larynx. An increase in the eosinophilic cells in the blood is characteristic of this affection. And the trichinæ can be demonstrated in the muscles on biopsy.

Bing refers to a case of diffuse scleroderma which he observed in a thirteen year old girl in whom there developed a generalized atrophy of all the skeletal musculature. The patient also showed progressive ulceration of the skin, and the formation of fistulæ from which calcium carbonate was recovered. She died from marasmus. The pathological examination showed that he was dealing with a combination of scleroderma and polymyositis interstitialis and tendinitis calcarea. This coincidence is noted by many observers including myself. Bruhns and Neumark look upon myosclerosis or myositis as part of the syndrome of scleroderma.

CASE REPORTS

We have recently had occasion to observe two cases of dermatomyositis in the wards of Bellevue Hospital. In view of the relative rarity of this disease, it was deemed advisable to report them. In both of them the clinical diagnosis was confirmed by muscle biopsy and in one of them there was evidence of involvement of the myocardium; this was demonstrated by electrocardiographic study. Both patients illustrated the coincidence of muscular lesions and sclerodermalike changes in the skin.

Case I.—M. W., a factory worker, widow, native of the United States, was admitted to Bellevue Hospital (service of Dr. Foster Kennedy) June 11, 1923.

She died on April 15, 1924. The family history was negative. She had had one child; no miscarriages. At twelve she had had malaria. Her chief complaints were erythema of exposed parts for five months. Weakness of arms and legs for three months.

Present illness—For eight months patient had

Fig. 1.—Case I, M. W. Microscopic section showing loss of muscle striations, round cell infiltrations and mild connective tissue changes.

been occupied in "novelty works." Her job consisted of pasting packets of face powder into vanity cases. Patient suffered from an attack of grippe (coryza and cough) in February, 1923. There was a heavy feeling in the head with great fatigue and fever. She returned to work during the latter part of February. About four months before she noticed itching and erythema of face, neck and arms. For three months there had been increasing weakness of the arms and legs. At first there were drawing pains in the limbs and stiffness of the back. Now she could even lift a light weight. She could not step up the curb without pain in the anterior part of the thigh and she could scarcely walk a block. The powder was analyzed in the Chemical Laboratory of Bellevue Hospital; no arsenic or lead was found. No other employees were similarly affected. Patient had had a cough for years. Sputum had been examined repeatedly, but no tubercle bacilli were found. She had lost weight.

Physical examination—The occipitofrontalis muscle felt rigid and indurated. Pupils responded well to light but poorly to convergence. Fundi were negative. Ocular muscles were normal. There was no nystagmus. Facies were a bit immobile and puffy. There was no paralysis of the seventh nerve; sensory fifth was normal. Masseters were rigid so that the mouth could not be fully opened. Tongue protruded in median line, felt firmer than normal. Some difficulty was felt in swallowing solids. Mucous membrane of mouth was red and beefy. There was weakness of proximal muscles in the upper extremity, especially the triceps group and more so on the left. Grips were also poor. The muscles seemed fibrous. Biceps and triceps jerks were diminished. Neither arm could be extended or flexed. There was a flexor contracture at the elbow joint. Muscles of the back and gluteals were weak. Recti were rigid but their power was good. There was weakness in the lower extremities with distal involvement as well, especially in the dorsiflexors of the feet. Knee jerks were diminished. Right ankle jerk was less active than left. Abdominals were feebly present. There was no Babinski; no sensory changes of any kind. Edema was present to a slight extent in the face but more marked in the calves of both legs and on the dorsum of both feet. There was diffuse mottling of the skin and brownish pigmentation of the face and body. Some acrocyanosis of the toes and fingers. Scleroderma-like changes were noted in the skin on the dorsum of fingers and on the forehead. Heart was negative with usual methods of examination but electrocardiogram revealed low voltage and tachycardia. Lungs showed râles at the left base and dullness at the apices. Edge of the spleen was just palpable. Blood culture was negative. Temperature ranged from 98° to 101°; pulse from 96 to 116; respiration from 20 to 30. Blood sugar figures were: 115 mgms. and 110 mgms. on two occasions. The dentist found foci of infection in three teeth. X ray examination of the chest revealed increased hilus markings, moderate engorgement in lungs. No infiltration or consolidation of either lung. No evidence of cardiovascular disease was demonstrated. Phenolsulphonephthalein output: first hour, thirty per cent.; second hour, ten per cent. (total forty per cent.). Subcutaneous injections of adrenalin produced no

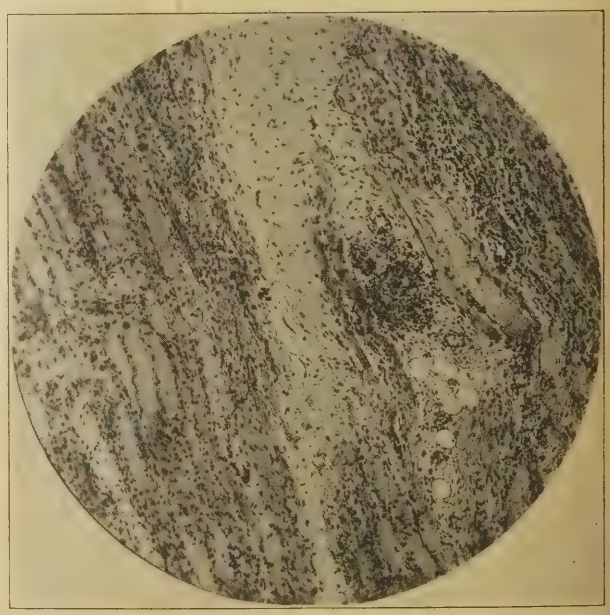

Fig. 2.—Case II, D. H. Microscopic section showing loss of muscle striations, round cell infiltrations with more marked connective tissue changes.

elevation of blood pressure or changes in the pulse rate.

Electrical tests showed diminished faradic responses in all the muscles. A diagnosis of dermatomyositis was made. A muscle biopsy was done and the clinical diagnosis was confirmed.

PATHOLOGICAL REPORT

Microscopic examination showed widespread histological changes characterized by degenerative and atrophic alterations in the muscle fibres and a variable degree of connective tissue replacement. The muscle fibres stained with different degrees of intensity and showed marked variations in size.

FIG. 3.—Case I., M. W. Showing pigmentation, edema, and somewhat immobile facies.

Some of them were cloudy and opaque, others pale and longitudinally split, so that the transverse striations were completely lost. Between the muscle fibres, in places, were richly cellular collections of small round cells. In other places, the muscle fibres were separated by proliferating fibroblasts or by fibrillar connective tissue. In still other places, the muscle tissue was completely replaced by rather broad, ribbonlike collections of fibrillar connective tissue. The bloodvessels were injected and small hemorrhagic extravasations were visible. Whether the latter occurred spontaneously or as a result of traumatism produced by removal of the tissue, was not apparent. Numbers of nerve fibres were present and some of them were surrounded or even infiltrated by dense collections of small round cells of the lymphocytic type.

Tonsillectomy was performed. A lung abscess developed at the right base, with cavity formation. This finally led to the patient's death.

On account of the progressive asthenia, the low blood pressure and the pigmentation, the question of adrenal lesion was entertained but the blood sugar studies showed no hypoglycemia nor was there any pigmentation in the buccal mucosa.

Arsenical and lead neuritis were also thought of but neither form of toxemia could be demonstrated. Infective neuronitis and polyneuritis were eliminated by the absence of any definite neurological findings.

CASE II.—D. H., plumber, fifty-four years of age, married, native of United States, was admitted to Bellevue Hospital (service of Dr. W. K. Draper) October 2, 1922. Died, December 13, 1922. The family history was negative. He recalled no diseases of childhood. The general health had always been excellent. He had typhoid at sixteen. There was no history of lead poisoning, no accidents or operations. He had gonorrheal infection thirty-five years ago. Lues was denied. The chief complaint was general and progressive loss of strength.

Present illness.—He began to feel tired and weak in June, 1922. Since August 1st, he had not been able to work because of increasing loss of strength, and he rapidly became bed-ridden. Both arms had become stiff. He experienced no pain except when his limbs were moved. There was general soreness of the muscles and joints. He felt drowsy all the time, but could not sleep. He had no headaches. For several weeks he had noticed involuntary twitching in the muscles, and said that his face became puffy in the middle of August. He had also noted swelling of both legs, and arms from the shoulder to the elbow. He suffered from dyspnea on exertion. There were no urinary symptoms.

Physical examination.—A poorly nourished white male lying quietly in bed. He appeared chronically ill. There was rather marked seborrhea of scalp. Corneal reflexes were present, no ocular palsies; pupils were equal, left slightly irregular; both responded actively to light and accommodation; discs were well outlined. Retinal arteries were somewhat tortuous; veins were not distended. No spots of hemorrhage or exudate. Face was asymmetrical. appeared slightly puffy, left side smoother than the right. The patient drew up right angle of mouth a little better than the left. Palpebral fissures appeared about equal. Winking reflex was somewhat diminished.

There seemed to be increased thickness of the

FIG. 4.—Case I, M. W. Showing pigmentation and edema.

skin and subcutaneous tissue on the right side of the face and neck, especially about the angle of the jaw. Several teeth were missing. There was rather marked pyorrhea, gums bled easily. Tongue was small (not atrophic) and moist, protruded in the midline; exhibited fine tremor. Pharynx was moderately congested; pharyngeal reflex normal. Tonsils were cryptic, not enlarged; several small patches

of follicular exudate were noted on the left tonsil. Chest was symmetrical, respiratory excursions rather limited on both sides. Breathing was thoracic in type, breath sounds distant, vesicular, no râles, resonance throughout.

Pulses were equal, regular, tension not increased; temporals slightly tortuous. Apex beat in fifth space four inches from midsternal line, first sound loud, muscular; short, soft systolic murmur at the base to left of the sternum; aortic second sound louder than pulmonic second. There was weakness of abdominal recti, no tenderness, rigidity or masses. Spleen was not palpable. Considerable erythema about the shoulders and over the back was noted, and some scattered areas of dermatitis over the face, sternum and arms. There was no enlargement of the glands.

The patient suffered from marked muscular weakness of the entire body; he was unable to move about in bed. There was considerable weakness of both sternomastoids, both trapezii, left more than right. Left latissiumus dorsi appeared weaker than right. Marked weakness of all muscles of the upper extremities existed, extensor muscles of forearms weaker than flexors. Weakness in legs appeared to be about the same on both sides, and all the muscles seemed involved. Both forearms were considerably swollen. Skin subcutaneous tissue and muscles had a doughy feel and exhibited marked pitting on pressure. There were scattered areas of skin and subcutaneous tissue that pitted on pressure and other areas in which the skin appeared to be bound down. The anterior thigh muscles felt hard and could not be poked up by the fingers—apparently fibrous replacement of muscle tissue. Elbows could not be fully extended because of pain and contracture of muscles. There was considerable atrophy of all muscles of the lower extremities with less edema than in the upper extremities. No hard masses or nodules could be felt in the muscles.

No ataxia or tremor was noted. Deep and cutaneous sensation were preserved throughout. Patient complained of rather marked pain on deep pressure over the muscles. Biceps and supinator jerks were slightly hyperactive, equal; left triceps jerk active, right not obtained; abdominals not obtained; cremasterics present and equal. Suprapatellar and infrapatellar reflexes were quite active, apparently equal. Achilles reflexes were active and equal. Plantar responses were normal. He answered questions readily and accurately; attention was slightly diminished. Speech was thick and at times hesitating. Responses to test phrases were fairly good.

A clinical diagnosis of dermatomyositis was made. Blood pressure was 124/68. Urine was negative. White blood cells were 9,500; polynuclears, 65 per cent.; lymphocytes, 35 per cent.; red blood cells, 5,600,000; hemoglobin, 80 per cent. Ears showed evidence of old otitis. Larynx not clearly seen because of patient's inability to open his mouth widely, but larynx appeared normal except for some thickening and redness of mucous membrane. Masseter muscles were indurated; patient could open the mouth only three fourths of an inch.

Repeated neurological examinations revealed no abnormalities aside from a slight hyperesthesia of the fingers and the dorsal aspect of the hands.

The patient received a series of fibrolysin injections without benefit. Later there were noted in the medial part of the deltoid muscles and in the left quadriceps, enlarged, firm, fusiform swellings, apparently in the muscle tissue.

On November 29, 1922, a muscle biopsy was performed. The pathologist reported chronic myositis.

The patient lost ground, breathlessness developed and he suffered much discomfort. Large moist râles were found scattered posteriorly over both lungs. Pulse was of fair quality. He was unable to swallow anything, and had to be fed by gavage. A second blood examination revealed the following: White blood cells, 16,600; polynuclears, 86 per cent.; lymphocytes, 8 per cent.; small mononuclears and transitionals, 6 per cent. The patient went into coma. The pulse became small and of poor quality. Signs of consolidation became evident in the right lower lobe. Temperature, 103.8° (terminal pneumonia). The patient died December 13, 1922.

During the course of the patient's illness, his temperature ranged from 98° to 92.2° except for the last four days when it rose from 99.6° to 103.6°. Pulse ran from 64 to 120, respirations 18 to 38.

MICROSCOPICAL REPORT

Microscopic examination of the muscle tissue in this case shows practically identical changes with the one previously described, although in this particular case connective tissue replacement had occurred to a far greater extent, being represented by broad bands of pale, poorly staining and poorly nucleated fibrillar connective tissue.

Unfortunately, permission for autopsy was not obtained in either case. In view of the recent work on nonmedullated innervation of striate muscle, it was thought that possibly part of the increased tone of the musculature might have been due to hyperadrenalism with resulting stimulation of the sympathetic tonus.

I wish to express my indebtedness to Foster Kennedy and William K. Draper for permission to report the cases from their respective services and to Douglas Symmers, director of laboratories of Bellevue Hospital for the pathological studies.

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Historical Medicine

An Historical Analysis of Laënnec's Scientific Work

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René Théophile Hyacinthe Laënnec (1781-1826) was born in Brittany, a country which has given birth to numerous noted men in philosophy, politics and science. It is my purpose in this paper to examine the principal scientific contributions of this illustrious physician, not merely with the intent of praise, but to point out his mistakes as well. His writings essentially pertain to pathological anatomy and semeiology, hence I shall envisage these two branches of medical science in their various aspects. For that matter they lend mutual aid to each other and in respect of each Laënnec made them equally brilliant in his *Traité d'auscultation*, the analysis of which forms the basis of the present paper.

However, before proceeding to the examination of his most important contribution to medical science, it is only proper to refer to some more or less noteworthy contributions from his pen written early in his professional career and which, it must be said, announced the budding genius.

LAENNEC

(From a painting by Dubois in 1812)

Early in 1804 Laënnec presented a paper to the Society of the Faculty of Medicine on what he called "vesicular worms," principally those attacking man. He describes several new species pertaining to the genus Cysticercus. His article contributed to the *Dictionnaire des Sciences Médicales* in 1812 is an elaboration of the paper of 1804. More fortunate than those who preceded him, he demonstrated the existence of the male and female organs of generation in Ascarides lumbricoides; the article may be read today with great profit.

His work on the membranes of the brain is important, while the synovial capsule lying between the humerus and the acromion apophysis was first brought to light by him. Furthermore, while still a student, Laënnec gave us our first inkling as to chronic inflammation—tuberculosis—of the peritoneal cavity which before him was regarded as an inflammatory process of the stomach, omentum, small intestine, mesentery and bladder.

Laënnec upheld two theses—as was customary in his day—before the Faculty of Paris—in 1804, for the degree of doctor of medicine. One was written in Latin, the other in his vernacular. In the former he fears not to maintain that Hippocrates never existed, that the writings attributed to him were written before the Peloponnesian war, and he is inclined to suspect that the word Hippocrates was, by the ancient physicians, used like the denomination of Pharaoh for various kings ruling Egypt. All this is merely due to youth, and further commentary is quite unnecessary.

In his thesis written in French, Laënnec rapidly reviews the doctrines of Hippocrates in respect of the practice of medicine, and after having pointed out that the Father of Medicine looked upon fever as a simple process, always identical and only differing in type, he reproaches him for not having developed a complete system of nosology. It must be candidly admitted that this assertion is not lacking in exactitude, but nevertheless is far from just. All those since the days of Hippocrates who have attempted to generalize and systematize the medical sciences have ended by so greatly differing from each other that, instead of coming to the truth, they have given rise to a thousand and one contradictory theories—frequently foolish—the consequences of which have, to say the least, been very dangerous for the practice of our profession.

Although the two theses in question can hardly be recommended for their wisdom and that moderation of judgment that Laënnec later on developed, they nevertheless show that he was a student well versed in the classical languages and that he possessed an independent mind.

The discovery, in 1806, of melanosis is one of the most important in general pathology. In point of fact it cannot be strictly called a discovery, because Bonet, Malpighi, Bartholin, Morgagni, Lorry and Haller had recorded instances of the process. However, Laënnec was the first to give an exact description of this pathological change and gave it the name of melanosis. He considered it an accidental tissue and a variety of cancer.

This opinion was accepted by Meckel, Walther and Alibert, but was forcibly denied by Gohier of Lyons, and especially by Breschet. In his paper published in 1821, Breschet shows that the melanotic deposit generally occurs in the adipous cells although like Laënnec he observed this morbid product in most of the tissues composing the living body. But far from regarding it as pathological tissue or a type of cancer as did his predecessor, he proved that it was a simple deposit of the coloring matter of the blood and fibrin. Laënnec was wrong in his conjectures in respect of the primal formation and nature of melanosis, but

we cannot contest the fact that he was the first, at the beginning of the nineteenth century, to draw attention to this morbid process which had been forgotten for a long time, while the practical considerations he draws from subjects affected with this morbid change are still quite valid at the present time.

Laënnec was happily inspired when in 1812 he stated in his article in the *Dictionnaire des Sciences Médicales* that the routine performance of autopsies would one day reveal all the various lesions of the viscera. At this time he divided all the morbid organic changes into four groups, viz.: 1, changes of the nutrition; 2, changes in shape or position; 3, changes of texture produced by external agents; 4, changes resulting from animated foreign bodies. At the time this classification was regarded as very defective. In the first place monsters are not included, while considerations in respect of the laws of organogenesis are completely neglected. And what is more, this classification reposes upon two very different bases, since one is physiological, the other nosological. There is no doubt that Laënnec was not very well satisfied with it, yet it must be said that his division of morbid tissues into analogous and heterogeneous was fortunate.

To Laënnec is due our first knowledge of encephaloid and colloid cancer, whose characters he described with matchless clearness and precision. He regarded them as morbid products entirely foreign to the tissues in which they developed and this opinion prevailed regardless of the arguments put forward by Broussais, Breschet, Ferrus, Andral and Cruveilhier against it.

In Cayol's translation of Scarpa's work on hernia, Laënnec has added a note on a new type of hernia he had occasionally met with to which he gives the name of extraperitoneal.

And lastly is to be mentioned a very interesting paper published by Laënnec in the *Bibliothèque Médicale,* in which the writer exposes with great equity Gall's system from the viewpoints of physiology and anatomy. The first part of the paper is a model of clearness, while the second is filled with a warmth of expression not usual in this great physician's writings. This paper reviews all the objections put forward against the famous, yet paradoxical, doctrine of the German physiologist and its author was, I believe, the first to show that the fundamental basis of phrenology is to be found in the writings of the Islamic physicians.

A new and brilliant impetus was now to be given to practical medicine and hypotheses were to become restricted, at least in respect of a numerous and important class of diseases—I refer to the pathological phenomena arising within the thorax. All this was due to Laënnec and his stethoscope.

The question has often arisen as to whether or not auscultation was really due to Laënnec and if he only perfected this diagnostic procedure. Many have affirmed that auscultation was known to the physicians of antiquity and that they employed it currently as a means of diagnosis. but I have never been able to discern any really convincing proof of this supposition. It is true that in the Hippocratic collection mention is made of rumbling noises in the thorax and rough respiration heard when the chest walls do not contract, etc., but who can maintain that Hippocrates or other ancient physicians ever detected a crepitant or bronchial râle? It may, perhaps, be admitted that the ancient practitioners were not completely ignorant of auscultation and that in some circumstances they practised it, but I am unable to believe that they made it a science and a sure diagnostic procedure.

I believe that Bayle was the first modern physician to listen to the thorax with the ear in the diagnosis of diseases of the heart and Laënnec was familiar with this fact which he admits in his book, and says he only imitates Bayle. But where Laënnec was original and inventive was to apply auscultation to the study of diseases of the lungs, a procedure which had served him well in distinguishing the circulatory sounds. Laënnec I think was wrong in believing that his stethoscope was the most essential part of his discovery and many historians of medicine have stated that auscultation was merely a chance discovery, yet nothing can be further away from the truth. Let me quote Laënnec where he tells how he invented his stethoscope:

"In 1816 I was consulted by a young person presenting general symptoms of heart disease, but on account of obesity the application of the hand (over the thorax) and percussion gave little result. The age and sex of the patient prevented me from making the kind of examination referred to when I recalled a well known acoustic phenomenon. If the ear be applied to the end of a piece of wood a pin scratch can readily be heard on the other end. I thought that perchance one might resort to this (physical) property with success. I took a notebook and rolled it into a tight roll and applied one end over the precardiac region and my ear to the other and was both surprised and satisfied to hear the heart beats more clearly and distinctly than I had ever been able to by direct application of the ear (to the chest).

"Hence I presumed that this means might become a useful method, not only applicable to the heart beats, but also to all movements which produce sound within the thoracic cavity and consequently for exploring the respiration, voice—and perhaps even the fluctuation of fluid collected in the pleura and pericardium.

"With this conviction I at once began at the Necker Hospital with a series of cases which resulted in the discovery of new and sure (diagnostic) signs for the most part easy to detect, rendering the diagnosis of nearly all diseases of the lungs, pleura and heart more certain and perhaps more particularized than surgical diagnoses made by the sound or finger."

. . . . . .

"The first instrument I used was a roll of paper having sixteen lines in diameter and one foot in length composed of three quires of paper tightly rolled and held together by a sheet of paper glued over all, each end being evened with a file. No matter how tightly rolled there will always remain a central canal three or four lines in diameter. . . . This fortuitous circumstance offered me, as will be seen, the opportunity of making an important discovery, viz.: that this central canal is absolutely necessary for the exploration of the voice (sounds in the thorax). A completely solid body is the best instrument for exploring the heart. If really necessary it can be used for the voice (sounds) and for detecting râles, but the

two latter phenomena are heard with greater intensity by means of a perforated cylinder hollowed at the end to about one and a half inches deep.

. . . . . .

"Consequently at present I use a wooden cylinder sixteen lines in diameter and one foot long with a central canal three lines in diameter. . . . At first I did not consider it necessary to give a name to such a simple contrivance but others thought differently and I heard it called by various improper and barbarous names such as sonometer, medical trumpet, etc. Therefore I gave it the name of *stethoscope* which appeared to me better to express its principal use, as I shall show it can be used for other purposes than exploration of the chest."

At present it must be recognized that Laënnec is, at least among us moderns, the real inventor of pulmonary auscultation. But this is not all; he made it *a science*. His book entitled *Traité d'auscultation médiate*, regardless of its modest title, is a complete treatise on diseases of the chest. However, semeiological researches represent the most interesting portion of the book, likewise the most original. When published, the book caused a profound sensation throughout medical Europe and can at the present time be read with profit and interest. I shall now attempt to give an idea of this work in order to show the greatness of the services Laënnec rendered the medical profession of all time and in so doing I will briefly refer to the state of medicine in his day in order that the reader may better understand the importance of Laënnec's researches which required three years to accomplish with results that the genius of man had not been able to attain in twenty centuries of labor.

The *Traité* is divided into two very distinct parts, namely, diseases of the lungs and affections of the heart, and we will follow this division in what we have to say.

Among the various affections of the respiratory tract there are some which were very inexactly understood at the beginning of the nineteenth century. For example, pulmonary emphysema had almost entirely escaped the attention of physicians; its etiological factors and anatomical changes were unknown. The correlation of its symptoms with the lesion characterizing the process had not been perceived. Laënnec's teachings showed that it was one of the commonest results of bronchial catarrhs and the profession learned, not without astonishment, that the majority of dyspneas which for years had been included in the generic name of asthma frequently were due to pulmonary emphysema.

None of the dogmatic schools of antiquity had referred to pulmonary edema, their remarks only bearing upon hydrothorax, although a few of the more modern writers have mentioned it. Laënnec was the first to describe this morbid process, but he was wrong in considering that it was essentially chronic in its evolution. Before the advent of the stethoscope reports of cases of pneumothorax were extremely uncommon, although Itard, a contemporary of Laënnec, had written a short dissertation on the subject. Riolan (1577-1657) had remarked that in some cases which he supposed to be "hydropsy of the chest," air escaped under pressure when puncture was done, instead of pus or serous fluid. Willis (1621-1675) has left us a very remarkable case of hydropneumothorax successfully treated by the operation of empyema, while Combalusier (1713-1762) refers to puncture of the thorax in a case of suspected empyema which gave exit to air. Hence it is clear that Laënnec was not the first to describe this pathological process, but we are compelled to admit that he alone described the diagnostic signs for detecting this lesion, namely, extreme sonority on the affected side and complete absence of the respiratory sounds, excepting at the roots of the lung.

Partial pulmonary gangrene was hardly known until Laënnec described it, although Bayle (1622-1709) had described some of its effects, but he gives a false idea of this morbid process since he regards it as a kind of pulmonary phthisis.

Pulmonary apoplexy (infarct) was hardly known as only two or three examples had been recorded. Its symptoms were likewise unknown because, in these cases, the patients who went to bed in apparent perfect health, were found later dead in bed. The anatomical changes and diagnostic signs of this process are very well described by Laënnec. Before his time the profession had more or less complete notions in respect to pleurisy and pneumonia and in practice were usually able to make a differential diagnosis between the two diseases, but theoretically their distinctions were, to say the least, most defective. If, for example, we consult Cullen (1710-1790), the following is to be found. Under the name of pneumonia, the Edinburgh professor comprises all the inflammatory processes involving the pulmonary parenchyma and the pleura, because, says he, there is no sign by which one may exactly determine the seat of the lesion. Sydenham (1624-1689) looked upon pleurisy and pneumonia as the consequences of an inflammation of the blood, while Stoll (1742-1787) supposed that all these affections were dependent upon a bilious diathesis; Morgagni (1682-1772) believed that "peripneumonia" was not distinct from pleurisy and von Haller (1708-1777) professed the same. Sarcone attempted to show that both affections were identical, while Portal (born 1742) affirmed that pleurisy did not essentially differ from pneumonia. Von Haen (1704-1776), who never believed in the identity of the two processes uselessly employed great sagacity in attempting to determine the characters properly belonging to each with an attempt at making a differential diagnosis which, of course, was unsuccessful. Then Laënnec took up the problem and by combining all the data offered him from the study of pathology, percussion and above all auscultation, he solved it in a most satisfactory way.

It would be idle for me to enter into detail of all the signs that Laënnec chose and so happily analyzed and used by him for outlining an exact symptomatology. It is quite sufficient to say that he pointed out that egophony and absence of respiratory sounds, excepting at the root of the lung indicate pleuresy, that a decrease of the respiration and the crepitant râle signify pneumonia and that in both diseases percussion dullness exists.

Chronic pulmonary phthisis and catarrhal processes were confused. Cullen was mistaken when he thought he could differentiate phthisis from chronic catarrh by affirming that in the latter process there never was hectic fever. Sauvages (1706-1767) described twenty

kinds of phthisis but made no attempt to differentiate them from bronchial catarrh. It is clear that Portal had no exact ideas in respect of phthisis, since he states that forty patients out of a total number of one hundred and eleven cases he reports, were radically cured.

The definition of phthisis as given by Thomas Reid can be quite as well applied to chronic catarrhal processes and the English physician made useless attempts to distinguish pus from mucus in expectoration. Dumas, of Montpellier, following Reid's example, employed all sorts of reagents in an attempt to discover the characters properly belonging to pus and mucus. Avenbrugger never applied his method to the study of pulmonary tuberculosis.

Morton (1635-1698) surpassed all the Dogmatic writers and various practices which, before Laënnec, composed the history of this disease. He described the general symptoms very well and he carries the diagnosis as far as it was possible before the discovery of percussion and auscultation. Then Laënnec in his turn, at last put an end to the uncertainty of science and his teachings on pulmonary tuberculosis form the basis of all works on the subject ever since.

That the ancient physicians were aware of some of the forms of this disease there is no doubt and according to Hippocrates himself a tumor first develops in the lung accompanied by a dry cough; it later on softens and ends by causing consumption. In the book entitled: *De morbis,* there is a passage of a few lines describing tuberculous ulceration of the lung with great clearness and exactitude. In Bonet's works some examples are given of organic changes evidently the result of this morbid process.

Morgagni has given very few details on the subject; he only dissected one cadaver of a tuberculous subject because he feared contracting the disease which, in his day, was regarded as contagious. Finally, we have those observers whose names have already been given who attempted to throw light on the symptoms, causes and treatments of an affection which is still one of the great scourges of the human race.

(*To be concluded*)

Contributors to Medical Science

John Baptist Morgagni

Morgagni was one of the greatest anatomists who ever lived and did more than anyone else to place morbid anatomy on a scientific basis. His observations on morbid anatomy, as testified by the many parts of the body to which the name has been given, and the connection of the appearances presented with the phenomena of disease, hold their value unimpaired up to the present time, because they were the result of able and patient investigation into the various conditions of the human economy illumined and stimulated by the fire of genius.

John Baptist Morgagni was born at Forli, Italy, on February 25, 1682. His father died when he was a child, but his mother, a woman of superior intelligence, and possessed of great will power, superintended the education of her son and encouraged and helped to cultivate the taste he manifested for study. Although young Morgagni was not a youthful prodigy, he made great progress in languages and the belles lettres and distinguished himself in philosophy, a study much favored in the schools and universities of his time. He, however, chose medicine for a profession, and at the age of sixteen took the degree of Doctor of Medicine at the famed University of Bologna, near which Forli was situated. Among his teachers were the well known Antonio Maria Valsalva, Hippolito Francisco Albertini and John James de Sandris. Morgagni seems to have been a model student. His memory is said to have been remarkable. An affection of the eyes, brought about by too close application to work, compelled his abstention from study for a time: a return to his native place and rest effected a cure. Upon his return to Bologna, he assisted Valsalva in his anatomical researches on the ear, and made most of the preparations described in Valsalva's work *De Aure Humana.* He filled the place of Valsalva during his absence from Bologna, becoming exceedingly popular as a lecturer, being eloquent, apt at description, and illustrating his subjects by a variety of preparations. Valsalva it may be said, was one of the distinguished pupils of Malpighi, an earlier and great Italian anatomist, and was "demonstrator anatomicus" in the School of Bologna.

When Valsalva was transferred to Parma, Morgagni succeeded him as demonstrator of anatomy. When only twenty-four years old, he was made president of the Academia Inquietorum and is said to have established the custom of exact anatomical observation rather than that of abstract discussion which had been the vogue formerly. He gave up his post at Bologna and occupied himself during the next two or three years in Padua and Venice with anatomical studies, in Venice with fishes, and with chemistry and pharmacy. During this time he also attended the lectures of the most celebrated teachers of the universities.

Then for three years he practised medicine in his native town of Forli with great success. However, he wearied of this work; no doubt he found that the sphere for the employment of his great gifts was too limited and he came again to Padua where he had a friend, Domenicho Guglielmini. Guglielmini died in 1711, was succeeded as professor of anatomy by Vallisnieri, leaving the chair of theoretical medicine vacant to which Morgagni was appointed. He came to Padua in his thirty-first year and taught brilliantly there up to the time of his death sixty years later. When he had been in Padua for three years the Venetian Senate promoted him to the chair of anat-

omy. Among his predecessors in this chair had been Vesalius Fallopius and Fabricius. He made a lasting friendship with Lancisi, and assisted him in his *Explanation of the Tables of Eustachius,* printed in 1714. Morgagni seems to have had a genius for friendship, and was popular with all classes of society. He lived in the pontificate of Clement XI, XII and XIII, and Benedict XIV. The latter made mention of him in his work *De Beatificatione Servorum Dei.* In his profession he was contemporary with and esteemed and admired by Valsalva, Albertini, Lancisi, Verheyer, Heister, Ruysch, Boerhaave, Mead, Senac, Haller, Meckel, Le Clerc, Fantoni, Nigrisoli, Michelelotti, Mollinetti.

Shortly after his return to Padua he married a lady of Forli by whom he had fifteen children. Although Morgagni was a widely read, learned and cultured man, and one whose acquirements extended far beyond the province of medicine, his main object of study was anatomy. His whole life was devoted to the elucidation of morbid anatomy. The value of his researches was widely recognized in his lifetime, and his name was entrolled as a member of the Academia Naturæ Curiosorum in 1708, of the Royal Society of London in 1724, and of the Academy of Sciences of Paris in 1781, he being named as the successor to Ruysch. He was also made a member of the Imperial Academy of St. Petersburg in 1735, and of the Academy of Berlin in 1754.

In short, his fame spread throughout Europe, and the inhabitants of his native city proud of their countryman erected his bust in the principal palace years before his death. He died on December 5, 1771, nearly ninety years of age.

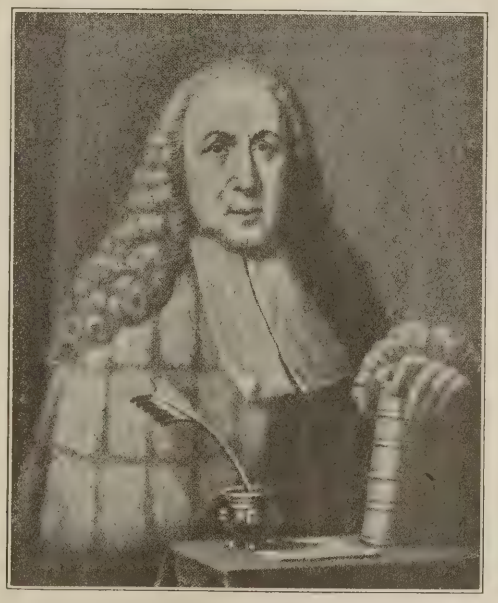
These lines from Dryden's Œdipus, apply well to the passing of Morgagni:

> Of no distemper, of no blast he died,
> But fell like autumn fruit that mellowed long
> Ev'n wondered at because he dropped no sooner.
> Fate seem to wind him up for fourscore years,
> Yet freely ran he on for ten winters more,
> 'Till like a clock worn out with eating time,
> The wheels of weary life at last stood still.

He was of fine stature, robust constitution, blond with blue eyes, and of an open and agreeable countenance.

It now remains to enumerate the works which came from his pen. They comprise the *Adversaria Anatomica* which work contributed to establish the fame of Morgagni both at home and abroad. It contains a variety of observations on minute anatomy. *The Adversaria* were six in number and were printed at different periods and places. The first at Bologna in 1706, the second and third at Padua in 1717, and the fourth, fifth and sixth, also at Padua in 1719. They were collected and printed at Leyden in 1723-4 and again in 1741, which is the best edition. *The Epistolae Anatomicae* and *Nova Institutionum,* are also valuable and have been printed frequently. He also edited and wrote a part of Valsalva's works. His chief work unquestionably is *De Sedibus et Causis Morborum per anatomen indagatis,* published first in 1761, the author being in his eightieth year. In ten years it was reprinted several times, three times in four years. Latin, original edition, French, English and German. One of the best editions is that by Chaussier and Adelon, printed in Paris in 1820. A good translation was made in English in 1769, a work now remarkably rare.

This work formed an epoch in medicine. Although the normal anatomy of the body had been discussed comprehensively and to some extent exhaustively by Vesalius, Fallopius and Harvey no one had described systematically the anatomy of diseased organs and parts. Morgagni in fact, revolutionized the study of morbid anatomy in much the same way as Vesalius his great forerunner had revolutionized normal human anatomy. Vesalius and Morgagni were the great anatomists of all time. It may be interpolated here that Morgagni who was at first inimical to the teaching of Vesalius became one of his devoted followers. Morgagni in one of his letters to Glaub in 1732, states that he has decorated his room with portraits of several men of eminence whose achievements had fired him with zest for work, and that among these portraits was one of Vesalius.



MORGAGNI

The five books which make up *The Seats and Causes of Diseases Investigated by Anatomy* contain altogether 640 dissections, subjects taken from all ranks of life from cardinal to peasant figure in this unique gallery of the dead. The work gives a vivid idea of the wonderful range of Morgagni's scholarship, indeed as is often the case with the learned, the books suffer somewhat from prolixity. While he had a fitting conception of the great importance of morbid anatomy he did not attempt to unduly exalt it or dissociate it from clinical and practical medicine. His work shows that in his day medical science had not become so largely technical and mechanical as it has become at the present time.

Symptoms were regarded by Morgagni in their proper light as "the cry of suffering organs" and not grouped into separate diseases. Morgagni initiated the point of view that the late Sir James MacKenzie developed that symptoms should not be the sole object of treatment and that primary causes should be sought. Morgagni may be termed the father of morbid anatomy as Vesalius may be designated the father of normal anatomy. The fate of these two masters of anatomy was very different. While Vesalius died a comparatively young man far from home and in tragic circumstances, Morgagni died honored and loved after passing the whole of his long life in peace and prosperity.

Editorial Articles

"FROZEN ENDOWMENTS"

Recently an appeal has been made public, signed by a distinguished group of medical men, urging that endowments for medical research, treatment, or education, be kept free from narrow limitations and rigid conditions. The men backing this appeal include presidents or expresidents of the American Medical Association, the American Surgical Association, the Society of Clinical Surgery, the New York County Medical Society, the American College of Surgeons, and the National Tuberculosis Association. Among the individual names are those of William J. and Charles H. Mayo, George W. Crile, George Emerson Brewer, Samuel A. Brown, Charles Loomis Dana, D. Bryson Delavan, Arthur B. Duel, Walter B. James, Emanuel Libman, James A. Miller, Bernard Sachs, J. Bentley Squier, George D. Stewart, William G. Thompson, and Linsly R. Williams.

The appeal states that institutional orphanages, frequently with endowments attached, have multiplied at the rate of one about every fifteen days over a thirteen year period. But the supply of orphans to fill them shows signs of diminishing, due to the effect of the campaigns against diseases causing death in middle life, of the decreasing mortality of parents during the infancy of their children, of mothers' pensions in preserving children from becoming institutional charges, and of the trend toward the placement of orphans in private homes rather than in public institutions. "Without deprecating the excellent work of many 'asylums' for orphans," the report states, "it appears demonstrable that changes in the size and nature of the problem and in the manner of caring for dependent children has tended to lessen the necessity for new orphanages, as compared with other urgent social needs." This is only one illustration from many cases.

The elasticity of the community trust plan for the administration of permanent funds for public purposes is commended as a means of forestalling the obsolescence of endowments. Dr. Walter B. James has accepted membership upon the distribution committee of the recently formed New York Community Trust by appointment of the Academy of Medicine, in response to an invitation from the trustees of the Trust. Under the community trust procedure, various financial institutions agree to hold and invest the principal of endowments, but to disburse the income only as directed by a central distribution committee. This committee executes the wishes of the original founders, and has power to effect such amendments in the provisions of the grant as may be made advisable by unforeseen changes in conditions. Thus a method is provided of bringing together endowment funds of whatever size, giving them permanent administration, and preserving them from becoming moribund. Each fund, large or small, constitutes an independent memorial. Each is placed for investment and safekeeping with any one of various national banks and trust companies, acting as trustees of the community trust. A more detailed statement of the community trust may be secured from Dr. Walter B. James, 7 East Seventieth Street, New York.

Such a plan is on the face of it a step in the right direction. State, county and municipal institutions that have outlived their need or usefulness would do well to take notice, as was instanced by the case reported recently in the daily papers of a county almshouse that had been kept open for more than a year and at a cost of several thousand dollars for *one* inmate. Both private and public funds and endowments should be so regulated that their expenditure may be adapted to timely needs instead of to outworn and useless purposes and ideals, that were doubtless high and praiseworthy at the time when the bequest was made or the fund appropriated, but are no longer in accordance with social requirements.

MANIPULATIVE SURGERY

Not long ago George Bernard Shaw, who is always ready to let fly a dart at the medical profession, declared in the British public press that surgeons, as a rule, had not sufficient manipulative skill to fasten their own shoe strings properly. Although the statement, of course, was not taken too seriously there was enough truth in it to arouse the medical profession. At a recent meeting of the Medical Society of London a symposium was held dealing with manipulative surgery. The discussion was opened by Mr. Rowley Bristow and Mr. R. C. Elsmlie well known orthopedic surgeons.

Mr. Bristow allowed that the criticisms aimed at manipulative surgery as done by medical men were, on the whole, largely justified. He complained that the methods of manipulative treatment were not absorbed into the general practice of medicine because the teachers in the medical schools did not recognize their value. Surgery in the medical schools and hospitals was taught on the grand scale. There would seem to be no room and no time for adequate attention to be given to those minor disorders which cease to be

minor as soon as the student leaves the hospital and goes into practice. This is to say that general practice is not made up of surgery on a grand scale but rather of these minor disorders and injuries with which the general practitioner is unable to cope successfully for the very good reason that when a student he was not afforded the opportunities for thorough training in their diagnosis and proper treatment. Mr. Bristow expressed the opinion that it would be wise for those who control medical education to examine their premises and to consider whether in the huge curriculum which now obtains, sufficient time and care is given to the instruction of the student in these minor ailments which form so large a part of practice.

One surgeon who joined in the discussion said bluntly that this ignorance of things that really matter in general practice was due largely to the fact that there was too much scientific training. He would not have stretched the truth greatly if he had affirmed that too much attention was paid to that branch of medical science which happened to be the vogue or the fashion at the time. Obsessed by his training to the effect that the methods of modern medical science were supreme, the practitioner was diffident about dealing with cases and sought other opinions and relied more and more on mechanical means of diagnosis. This speaker said that there had been great manipulative surgeons before the use of the x rays. Thereby inferring that while modern scientific methods and surgery had advanced greatly, knowledge gained from clinical experience had retrograded in a similar proportion and that the general practitioner nowadays was not the reliant and skilful man he was formerly because he had not been trained properly in clinical methods but taught to rely too greatly on others and mechanical means. Unqualified men and illegitimate practitioners of every description have taken advantage of the situation with the consequence that a great deal of the practice which should be in the hands of those who have spent long years and much money in obtaining the right to practice is being done either by those who have spent short years and less money on special work or by those who are untrained.

Of course the merits of manipulative methods are grossly exaggerated. They are useful and the general practitioner should be well trained in them but they are not panaceas for all the ills to which flesh is heir as their advocates claim. As pointed out by more than one speaker in London the publicity propaganda fostered by the lay press is a powerful weapon in the hands of the bonesetters. Their triumphs are loudly applauded and their failures not mentioned. Generally speaking, the opposite is the case as regards medical men. However, the conclusions reached at the symposium in London seem to have been that as the majority of budding physicians and surgeons will be general practitioners and not specialists, their training should fit them for the class of work they will chiefly meet with, minor disorders and minor injuries. These appear to be sane conclusions and as the situation here does not differ very materially from that in Great Britain, similar advice is applicable to those responsible for the control of medical education in this country.

WHAT IS A DEFECT?

We have endless statistics, these days, of defects and defectives. The layman is often confused and confounded by these exhibits and even the physician may gasp a little at the amazing state of affairs which is sometimes supposed to be revealed. What is a defect? Does a wart deserve the distinction, and when? Is an inequality in length of feet a defect, and which foot is defective? George Washington had a deformity of the chest. Was the father of his country defective? If so, his children might well have such an inheritance.

In the examination of children in the Scanlon School of Chicago by the Tuberculosis Association of that city "forty per cent. were found to have defective vision," though "only seven per cent. were urgently advised to have their eyes cared for." It has long been known that not more than two per cent. (if that many) of eyes are anywhere near perfect; are we to infer that the Chicago children have such superior vision? But why should only seven out of a hundred be cared for?

In one large city the seventy medical examiners of schools differed so widely as to what a defect of vision is that one found only 1.5 per cent., while another found twenty-four per cent. The range as to diseased tonsils was from two per cent. on the one hand, to thirty-five per cent. on the other; for nasal obstruction, from one to twenty-two per cent.; for decayed teeth, from eight to forty-nine per cent.; for stoop shoulders, from one tenth to nineteen per cent.; for anemia, one half to twenty-five per cent.; and for defective heart, from none to 3.5 per cent. How such an evident condition as stoop could be found 190 times to one by two examiners, or that there could be any mistaking nasal obstruction or decayed teeth seems inconceivable. Such evidence betokens either gross negligence in preparation of the examiner or equally gross negligence in examination. It indicates, incidentally, the poor class of medical examiners employed in public schools—men who have neither adequate training nor interest (further than financial). This is not the fault of the physicians, but of the schools which train and the public which likes cheap help for the care of its most important possessions—its children. It is interesting to note that those who

have had experience of the examination of children by school teachers find that, on the whole, they know their business better than the average medical examiner, and it would certainly seem impossible for them to be more wild in their guesses at what a defect may be than the doctors we have mentioned.

We are advertising heavily our annual examinations of adults. Are we any better equipped to recognize a defect in them than in school children? We cannot see that we are. Five hundred men of about the same age, at the same employment, in two large cities, were examined recently by two separate groups of specialists. According to the returns from these examinations about ninety per cent. of one group possessed diseased tonsils and ten per cent. of the other group; about eighty per cent. of one group had arteriosclerosis against about ten per cent. in the other. It is needless to say that one throat specialist had a bad tonsil bug in his brain. As regards the arterial defect, the examiner for one group depended on his touch for determining the condition of the vessels, while the other used a certain degree of blood pressure. With the mention of blood pressure we are only opening up the subject of what a defect is or is not.

We are having too much of standardization along many lines, but it would seem that there might be better teaching, undergraduate and graduate, as to what is meant by a remediable defect, for we do not consider that we should waste our time with enumerating and tabulating any that are not of such a nature as to really need treatment.

THE LEAD TREATMENT OF CANCER

Professor Blair Bell of Liverpool University a few weeks ago read a paper on the treatment of cancer by lead at a meeting of the Toronto Academy of Medicine. He asserted that he and his associates had treated cancer with some degree of success by a socalled colloidal form of lead. So great publicity was given to Professor Blair Bell's statements, in lay as well as in medical journals in this country and in Canada, that a feeling of optimism seems to have been created among some that the cancer problem had been solved once and for all.

Of course the statements made by Professor Bell warranted no such optimism as is now demonstrated by the evidence of Professor Francis Carter Wood, Director of the Institute of Cancer Research at Columbia University, who has returned recently from a visit to Liverpool, where he went for the express purpose of investigating the situation as regards the Bell treatment. It appears that, although the treatment has met with some success, the method is not unattended by danger and is certainly dangerous if the lead which is injected into the veins of the patient is not prepared by expert chemists and employed fresh. Moreover, experience is needed to judge whether full doses can be given or not, while numerous analyses must be made of patients' blood and other fluids to watch the progress of treatment and to be aware if the danger point is being approached.

As a matter of fact, the lead method is as yet in the experimental stage. The use of the drug has not been standardized nor is the preparation of lead stable. Much has to be done ere the lead mode of treatment can be brought into general use. All that can be said is that the treatment has many encouraging features and seems to be one which, if it be perfected, may improve the treatment of cancer to a remarkable extent.

THE IMPORTANCE OF FOCAL INFECTION

The part which focal infection plays in the initiation and development of disease is now being estimated with a fair degree of accuracy. In referring to focal infection it may be pointed out that it is in the mouth and immediately adjoining parts that foci of infection are most common. Many of the acute or semiacute diseases originate in the mouth, nose or throat by inhalation of microbes or germs there present are excited into activity by causes as yet unknown. It has been suggested for instance, that the inhalation of silica dust is a potent means of arousing into activity the germs of tuberculosis. This seems to be the theory that is gaining in favor, that some unknown cause activates latent germs into activity. In any event, it is of the first importance to keep the mouth and its adjoining parts as clean as possible. Not only the acute infectious diseases of which rheumatic fever is undoubtedly one and the chief cause of heart disease the most deadly of civilization which are spread by means of the mouth, but many of the chronic diseases, the joint forms of rheumatism are owing wholly or largely to germs of low vitality which inhabit the mouth, the gums for example.

Chronic rheumatism is the cause of more invaliding and disability than any disease and according to statistics gathered by the English Ministry of Health seventy per cent. of the cases of rheumatism in that country are due to infection in the mouth, largely to infection in the gums by a microbe of low vitality but of great persistence, probably a streptococcus. In the Scandinavian countries the situation is similar and no doubt it is not different, at least, to any great extent in America.

Taking all these points into consideration, it may be stated without exaggeration, oral sepsis is an influential factor in the production of disease.

In this connection attention may be directed to a powerful article contributed to the issue of this Journal of January 20, 1926, by Dr. F. G. Crookshank of London, in which he shows logically the sequence of events which may and frequently do follow oral sepsis in different forms and points out that it may be truly said that specific infections are caused by antecedent and nonspecific infections and of course as far as the practical lesson as regards the mouth, gums and adjoining parts is concerned, is to keep them clean, that is to prevent oral sepsis from gaining a foothold. In the prevention of disease and in preventing foci of infection, the care of the mouth is of first importance, because foci of infection are obviously more common in the mouth than anywhere else and because a dirty mouth may mean the poisoning of the body and a consequent lowering of its powers of resistance to disease.

GOITRE AND IODINE

There is much searching for goitres these days and much piling and compiling of statistics as to their frequency. From the nature of these statistics and from general observation we often wonder whether these students of goitre are always sure of a goitre when they see it, or whether any of us know just whether or when a goitre exists. Goitres are always found to be more common in girls, a fact which makes us feel that the question is the more apposite. Studies made thirty years ago showed that the thyroid enlarges appreciably during the time of menstruation, and, seen at this time, this temporarily enlarged organ must often be classed as an abnormally large organ, when at some other time it would be considered normal. Again, in thin persons a thyroid might seem prominent, which, when covered with abundant adipose, would be pronounced normal. There can be no exact measurements and the statistics must be very rough indeed and depend very much on the ideas of the examiners.

Certainly if New York city examiners do not see goitres more readily than those in other regions there is a considerable percentage of them among girls on the seacoast, for, according to Goldberger and Aldinger of the New York public schools, the gland was slightly enlarged in 17.2 per cent. of white girls, moderately enlarged in 2.6 per cent., and markedly enlarged in 0.5 per cent. Do twenty per cent. have goitres? The enlargement in colored girls was somewhat less frequent.

In the examination of 595,206 school children in New York State rural and smaller city schools, made by many examiners, goitre is reported as a "defect" in about 2.6 per cent., but we are not informed whether these were slight, moderate, or marked cases. In Philadelphia schools two to three per cent. has been reported as the average by many examiners for a number of years. Doubtless these were at least moderately enlarged glands or they would not have been noted in routine inspection in past years.

Dr. A. S. Jackson, of Madison, Wis., calls attention in the *Boston Medical and Surgical Journal* of December 17, 1925, to the danger from the use of iodine in the treatment of adenomatous goitre. He says: "Although I have advocated and am continuing to give iodine in definite amounts in the prophylaxis and treatment of early colloid goitre, I am not too well satisfied with my results. I have one series of at least one hundred cases in which iodine has been administered over a period of two years with little or no appreciable effect." However, "the laity as well as the profession should realize that any adult who has a goitre and takes iodine does so with considerable risk. I believe that iodine should be dispensed only on the prescription of a physician."

Dr. Jackson goes on to tell of a series of fifty cases of iodine hyperthyroidism in which the mortality was higher than for any other form of toxic goitre. He holds Lugol's solution, administered by the family physician, as responsible for six of these cases and thinks seven cases were due to the use of patent medicines. He thinks the disease a distinct entity, though resembling exophthalmic goitre in many ways.

THE INCREASE IN TYPHOID FEVER

Preliminary reports of cases of typhoid fever from the health officers of forty-one states, covering the first eleven months of 1925, show an increase over the same period in 1924 of forty-five per cent., according to a report in *Public Health Reports* for January 29th. An increase is noted in all the groups of states except New England and the Pacific coast. The increase by quarters is as follows: January to March, two per cent.; April to June, fifty-eight per cent.; July to September, fifty-four per cent.; October to November, forty-seven per cent. Some of the apparent increase, according to the report, is undoubtedly due to more nearly complete reporting of cases which has resulted from increased activity of state and local health departments and improvements in methods of securing reports of communicable diseases. This remark applies especially to some of the Southern and Southeastern states. It should be borne in mind, states the report, that the number of cases in 1924 was very low as compared with the number a few years ago. A comparison of the number of cases of typhoid fever in 1925 with similar figures for some of the States for 1915 and 1916 shows that the 1925 figures are generally lower. Records of cases which are comparable with present records are available for only a few years; but the death rate from typhoid in the registration area dropped from 31.3 per 100,000 population in 1900 to 6.7 in 1924. This indicates that the 1925 case rate would appear low if compared with rates of twenty years ago.

The New York Hospital, Duane Street and Broadway

The New York Hospital

MABEL WEBSTER BROWN, B.S.
New York

One of the chroniclers of the New York Hospital has aptly said that the history of the hospital is really that of New York City since the Revolution. Although it was organized as an institution and its charter granted before the war began, it was never used as a hospital until the war was over. But it was not the first hospital to be established in Manhattan. A primitive institution had been opened under the rule of the Dutch near Whitehall Street about 1638 to care for sick soldiers, who had previously been billeted upon private families, and for the West India Company's negroes, but this was in existence for only a few years. The primitive state of medicine and surgery at this time may be illustrated by incidents such as the following: In 1652 the Director and Council had to refuse a petition from the "chirurgians of New Amsterdam" that none but they be allowed to shave. The Director and Council "understood that shaving doth not appertain exclusively to chirurgery, but is an appendix thereto. . . No man can be prevented from operating on himself, nor to do another this friendly act, provided it be through courtesy, and not for gain, which is hereby forbidden." It was also decreed that "ship barbers shall not be allowed to administer any potions, without the previous knowledge and special consent of the petitioners, or, at least, of Dr. La Montayne."[1]

Medical education in the colonies was almost as primitive as was the practice of the healing art. In 1767, after the British rule had been inaugurated, a medical department was established in King's College, now Columbia University. In 1769 the first graduates two in number, received their medical degrees in Old Trinity Church, where in fitting commemoration of this event, the exercises of the one hundred and fiftieth anniversary of the founding of the New York Hospital were held in 1921.

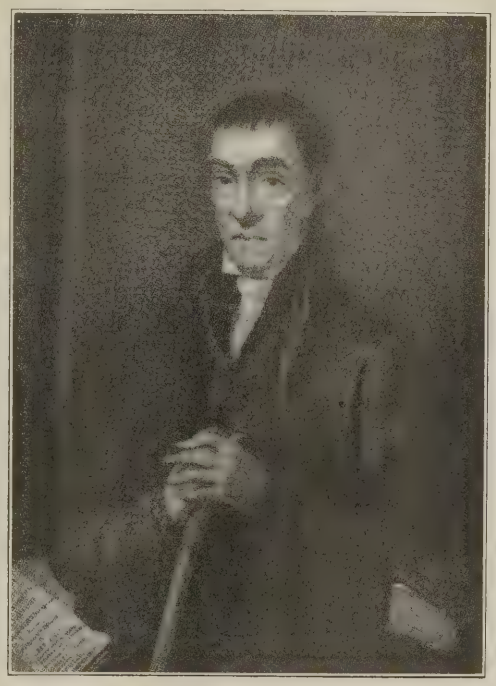
At this time the colony of New York had a population of about 200,000, about 20,000 of whom lived in the city. There was not a single hospital in which the sick could be cared for. It was Dr. Samuel Bard, a student of King's College and the London Hospital, and a graduate in medicine of Edinburgh University, who made an address at the graduating exercises urging the community to fill this crying need for a general hospital, not only for the sake of the sick, but also as a centre for proper medical education. Others prominent in the work leading to the organization of the hospital and the obtaining of a charter were Dr. Peter Middleton, Dr. John Jones, and Sir Henry Moore, Governor of New York. A charter was granted on June 13, 1771, to "the Society of the Hospital in the City of New York in America." A seal with the legend of the Good Samaritan was adopted, the original silver die of which is still used by the Society, and an annual appropriation of 800 pounds sterling for twenty years was voted by the Colonial Assembly.

[1]The Old New York Hospital, by D. B. St. John Roosa, Postgraduate, January, 1900.

The original die of the old seal is set on a pivot, so that it may be revolved above the fireplace in the Board Room of the present building of the Society in West Sixteenth Street. Framed above the fireplace is the original charter, yellow with age and stained from a burial or two for safekeeping, the first at the time of the revolution.

The location finally chosen and purchased from Mrs. Barclay and Mr. Rutgers for the hospital buildings was five acres on a slight hill on Broadway opposite Pearl Street, and on September 3, 1773, the corner stone was laid with exercises presided over by Governor Tryon. For many years the hospital was quite remote from the city, and was considered quite a distance "up town" until 1850. The story goes that one of the early staff members whose residence was at the Battery resigned his position because he found it too far to walk from his home to the hospital, and he did not wish to buy a horse.

Early in 1775, when the buildings were practically complete, a staff chosen, and preparations for receiving patients were being made, an accidental fire broke out and almost destroyed the interior. However within a year the damage was repaired and the hospital was ready to open when the Revolution broke out in 1776. With the beginning of hostilities, the New York Committee of Safety ordered the hospital to be made ready to receive Continental troops, and the first patients were some American soldiers who were wounded in an engagement between shore batteries and two British warships in the Hudson. One of the cannon balls in this fight landed on the hospital lawn. When the city was captured in September by the British, the hospital became a barracks for British and Hessian troops, and for the next seven years, it continued to perform this function, varied by occasional use as a military hospital. At the close of the war a long period of reconstruction and reorganization had to be undergone, with the result that this "asylum for pain and distress," as the Governors called it, was not opened for the treatment of patients until 1791. A few years later the corporate title of the institution was changed by the Legislature to its present form, the Society of the New York Hospital.



THOMAS EDDY

The stately old hospital buildings of grey stone, surrounded with beautiful lawns with gay flower beds and grand old elm trees, were one of the city's most admired landmarks. The grounds extended from Broadway west to Church, and from Duane Street north to Worth. There was a long walk up from John's Gate, with glimpses of the Hudson between ivy clad tree trunks and over vine covered stone walls. Tame deer greeted the stroller, begging to be fed and petted. There was a high "picket" fence, with a real gate that was locked after a certain time at night, so there was no easy getting in after hours. Also a grim Cerberus-like being recorded belated arrivals and told the tale the next day. In addition to the main hospital building, with its fine cupola, the original group included the North Building, the South Building, a laundry, large stables, and a lecture building where autopsies were held. There were five hundred beds for patients. This group housed the hospital until 1870.

A great many interesting events, historical and otherwise, were looked down upon by these grey old walls. A lot back of the hospital was so remote from human gaze that it was chosen in 1786 as the scene of a famous duel. A few years later, in a little house just behind the hospital, the famous demimonde beauty, Helen Jewett, was murdered, an event, which, with its succeeding trial, was one of the sensations of the day in New York. Perhaps the so-called Doctors' Mob was the most serious affair for which the New York Hospital was responsible. Dr. St. John Roosa's account of this is most interesting. "After the war closed," he writes, "some destitute Scotch emigrants were allowed to use the building for a place of shelter for a few weeks. The Legislature of the State, even, was accommodated with some rooms during some particular session at about this time. In the following winter, Dr. Richard Bailey of King's College occupied one or two rooms for anatomical lectures. Dr. Bailey seems to have operated upon a patient in one of the rooms, and, finding him unfit to be removed, he was permitted to attend him there until he recovered. The historian states that the public mind was somewhat startled during the winter by the rumor that dead bodies had been stolen by the medical students from the different cemeteries. One April Sunday morning in 1788—and here I follow Mrs. Lamb's history—some small boys climbed a ladder which had been left resting against one of the walls by a workman the day before, and peeped through the window to see what was going on within. A young surgeon, busy upon a subject in the dissecting room, greeted the first inquisitive youngster with the flourish of an arm—not his own—and the boy fled with the news to his father, a mason, who repeated the story to his comrades, and, seizing such tools of their trade as would best serve them as weapons, they started in a body for the hospital. Their force increased as they advanced, and the whole city was in wild tumult. The hospital was surrounded, the doors burst in, several subjects were discovered, and a collection of anatomical specimens destroyed. The mob swore vengeance upon all the doctors in the

city, and started for the house of Dr. Cochrane, which they ransacked from cellar to garrett in search of subjects. They omitted to open the scuttle and look out on the roof, or they would have discovered Dr. Hicks, of whom they were in hot pursuit, snugly hiding behind the chimney. In the height of their frenzy they passed the house of Sir John Temple, and, mistaking the name of Sir John for 'surgeon,' attacked it furiously and were just barely restrained from leveling it to the ground. As night approached the ranks of the rioters were thinned, and it was hoped the trouble had ended. But small bands patrolled the streets, and in the morning the mob was greater than ever, having been joined by sailors from the vessels in the harbor. And it proceeded at once to storm the jail, breaking the windows, tearing down fences, and threatening to drag the doctors out and hang them. Governor Clinton, Mayor Duane, Secretary Jay, Baron Steuben, Hamilton, and other prominent citizens endeavored to appease the popular fury, but in vain. Jay, in driving to the scene, was severely wounded in the head from a stone thrown through the glass of his chariot. The Mayor hesitated to give the order to fire upon the mob. Baron Steuben, in the benevolence of his heart, was remonstrating with the Governor against attempting to quell the riot with firearms, when he was hit in the forehead with a brickbat and fell bleeding to the pavement, crying loudly, 'Fire, Governor, fire!' That seems to have ended the riot."

Present Building of New York Hospital

By 1870 the financial burden of maintaining a hospital on the original spacious and valuable site became too heavy, and the Governors vacated the buildings and leased the ground on long terms, which are still being renewed from time to time. As soon as funds became available, a new hospital was built on the present site between Fifteenth and Sixteenth Streets, west of Fifth Avenue. While the hospital was being moved from lower Broadway, the demand for an emergency hospital service in that locality resulted in establishing a hospital in a disused police station on Chambers Street. This service became so important that in 1894 the Society acquired a plot at the corner of Hudson and Jay Streets and constructed a modern fireproof hospital building known as the House of Relief, which was maintained until 1919, when the property was bought by the Government since two other hospitals recently established in the neighborhood were supplying its needs.

In 1877 the New York Hospital established an ambulance service which is still being maintained, with a record of nearly two hundred and fifty thousand responses to calls to date.

An outline of the work done by the hospital in aiding other institutions is given by Mr. Edward W. Sheldon, president of the Board of Governors, in his historical address at the celebration of the one hundred and fiftieth anniversary of the founding of the hospital. The Governors cooperated in the establishment of the New York Dispensary in 1795. From 1801 to 1827 the hospital took in the Society of the Lying-In Hospital and its operations; the New York Lying-In Asylum from 1823 to 1825; the New York Eye and Ear Infirmary from 1824 to 1826; and the New York University Medical School from 1866 to 1869. In 1792 a step of tremendous import was taken in the assumption of the first care in the state of the mentally diseased. In 1799, a few months after Jenner had announced his great discovery in London, Dr. Valentine Seaman introduced vaccination for smallpox into America at the New York Hospital. There, from 1798 to 1870, a special hospital service for sailors was maintained. "There, in 1816," to quote from Mr. Sheldon, "the philanthropic Quaker, Thomas Eddy, a Governor, the treasurer, and afterward the president of the Society, who had made a study of the reforms then in progress in France and England under the direction of Philippe Pinel and William and Samuel Tuke, presented a memorable report to the Governors in which he advocated a radical change in the medical treatment of mental diseases. This resulted in the establishment, in a spacious country site on Morningside Heights, of a separate department of the Society known as the Bloomingdale Hospital, open to the whole country, which has ever since cared for the mentally afflicted on a humane and scientific basis, and has gained a world wide reputation."

In 1816 the New York Hospital issued an American pharmacopeia that had been prepared by Dr. Samuel L. Mitchill and Dr. Seaman primarily for the use of the staff, but which became a standard

for most of the country until the first United States pharmacopeia was prepared in 1821 under the supervision of a convention of state medical associations in Philadelphia presided over by Dr. Mitchell.

Among operations performed for the first time at the New York Hospital were those of ligature of the common carotid artery by Dr. Wright Post in 1813; of the external iliac artery in 1814; of the subclavian artery in 1817, and the ligature by Dr. Valentine Mott in 1818 of the innominate artery. There Dr. Francis U. Johnson as early as 1832 abandoned the old method of treating fevers by depletion. In 1835, after an inquiry into the cause of erysipelas in the surgical wards of the hospital, a detailed report was made and published with definite recommendations for rearrangement of wards, greater cleanliness, larger and more competent force, etc.

Especially in its early days was the New York Hospital a centre for medical education. At the old Broadway Hospital three hundred students regularly attended the clinics held in the main building, and as many more those held in the new South building. In 1796 a medical library was established, which was open to the public. When the financial burden of its maintenance became too great, the collection of 23,000 volumes was given to the New York Academy of Medicine. In 1840 a pathological cabinet was inaugurated, which in 1901 had become so large that it could no longer be accommodated, and so was divided among the laboratories of various medical colleges.

Second only in importance to the training of doctors has been the training of nurses. As early as 1799, Dr. Seaman gave a course of lectures and practical demonstrations of the care and nursing of maternity cases. In 1877, when the New York Hospital moved into its new quarters on Sixteenth Street, it established a school of nursing which is still in operation. This is the second oldest institution of the kind in the country.

In all the wars that the country has suffered, the New York Hospital has played its part in care of the sick and wounded and service on the field. In the Spanish-American war, much service was rendered in the typhoid epidemics at some of the camps and at various posts and camp hospitals in Cuba, Porto Rico and the Philippines. During the World War a unit from the New York Hospital maintained in France at Chateauroux United States Base Hospital No. 9, which cared for a total of 15,000 medical and surgical cases. Another contingent from Bloomingdale Hospital's staff went abroad and served with merit in the care of those suffering from war neuroses and psychoses.

In times of epidemics the New York Hospital has also played a large and valuable part in care of patients, both within and outside its walls. This has been the case from the time of the early yellow fever and cholera epidemics, through those of infantile paralysis and influenza, down to the present day.

In addition to the general medical and surgical divisions of the hospital, and the special departments already mentioned, the hospital maintains a Division of Laboratories, a Department of Urology on the recently established Brady Foundation, a Department of Radiology, a Social Service Department, and various out patient clinics. Mr. Sheldon states that from the opening of the hospital in January, 1791, until January 1, 1921, the Society treated in all its departments a total of 2,015,000 patients.

No outline of the history and work of the New York Hospital would be complete without a sketch of its chief department, that for mental diseases, namely, Bloomingdale Hospital, at White Plains. It was in the old Broadway Hospital, in September, 1792, that the Governors directed the admission of the first mental case. After a few years a special building was constructed for such cases, but this soon proved too small since its limit was seventy-five patients; so, when Thomas Eddy presented the results of his study of the care and treatment of the mentally diseased to the Governors, in which he urged the purchase of a large tract of land near the city and the erection of suitable buildings, remote from the congested life that he foresaw would mark the lower part of the city, his advice was acted upon. A tract of land was bought on the corner of Broadway and 116th Street, where the library of Columbia University now stands. In 1868 a tract of 300 acres had been bought at White Plains, New York, since the Governors had realized that a site for such an institution in New York city must at some time become impracticable; but it was not until 1894 that plans were completed, new buildings constructed and the new plant ready for the reception of patients. This is the site which Bloomingdale Hospital now occupies.

So we see how the history of the New York Hospital is in a sense that of the city of New York since the days of the Revolution. The closing sentences of Mr. Sheldon's memorial address bear witness to this. "The origin of the institution," he writes, "had so lofty a purpose, its affairs were administered with such devotion the personnel of its Board of Governors, its membership, and its medical staff, were so representative of the best the city contained, that the Society touched the community closely. Its attending physician was President Washington's medical adviser during his official residence in New York; another attending physician and one of its attending surgeons ministered in 1804 to Alexander Hamilton's fatal wound; in 1824, while visiting in New York, General Lafayette became our guest and honorary member; in 1862 the surgeons of the visiting French fleet were entertained at the hospital; and at all times that building was the Mecca of the medical profession throughout the country...But no account of the achievements of the hospital in the century and a half of its corporate life could be complete which did not award the fullest recognition to the devoted band of physicians and surgeons, the first of whom by their commanding vision and influence brought the institution into being, and who, with their successors during the intervening generations down to the present time, have made its great accomplishments possible. An adequate appraisal of the work of those brilliant practitioners and teachers must be intrusted to a competent hand, and will some day, we may hope, be duly executed. But the admiration and gratitude we all feel for the noble service which they have gratuitously rendered for the relief of the sick and for the advancement of medical education, must not remain unexpressed. They have included the flower of the American medical profession, and they have left an ineffaceable imprint on the development of the art of medicine."

News Items.

New York Birth Rate.—The birth rate in New York State in 1925 was the lowest ever recorded—20.6 per thousand population.

McClintock Foundation.—A memorial foundation for the study of alimentary diseases has been endowed by a gift of one half million dollars, from the widow of the late Andrew Todd McClintock, M.D., of Wilkesbarre, Pennsylvania.

Darling Prize.—As a memorial to the late Dr. Samuel T. Darling, of Baltimore, the League of Nations has approved a prize to be awarded by the Malaria Committee of the League for research work in that disease. The fund is to be collected by private subscription.

School of Tropical Medicine.—Dr. Robert A. Lambert of New York is to be the new head of the school of tropical medicine, recently established in Porto Rico by Columbia University. This is part of a Pan-American medical centre which Columbia hopes to establish, to cooperate with the University of Porto Rico in the conquest of disease in the tropics.

Influenza.—Outbreaks of influenza are reported at widely separated places. In Texas, Houston and El Paso have been affected; in the latter city sixty teachers and over nine hundred pupils have been absent at one time. In Missouri eleven thousand cases were reported in January, the epidemic continued in February; at the little town of Sodus, New York, one thousand people, half its population, have been ill with the disease. Syracuse, New York, faces an epidemic of the proportions of 1918, and in Binghamton and Gloversville, large numbers of cases are reported.

Benefit for Physicians' Home.—Verdi's Requiem Mass will be sung by the Metropolitan Opera Company, Sunday, April eleventh, for the benefit of the Physicians' Home. The soloists will be Gigli, Easton, Mardones, and Telva. The money secured will be used toward the purchase of the estate of the late Colonel Edward M. Knox, (known as Downsbury Manor) at Ridgefield, Connecticut. This will be the Eastern unit of the Home.

Anniversary of Dr. Wilbur.—The tenth year of Dr. Ray Lyman Wilbur as president of Stanford University was celebrated by a dinner given by the board of trustees. Dr. Wilbur is an alumnus of the university.

Hospital News.—The Flushing Hospital plans a campaign, beginning May 1st, to raise $750,000 for an addition.

The Lebanon Hospital of New York will start work on its new building at Grand Concourse and Mount Eden Avenues, June 1st. Its capacity will be two hundred and fifty beds.

Montefiore Hospital of New York will build a new tuberculosis sanitarium at its Bedford Hills branch. Eight buildings for patients, connected by covered passageways, and a research laboratory, are planned, at a cost of $1,500,000.

The Holy Family Hospital of Brooklyn is conducting a campaign to raise $500,000.

The Newton Hospital, of Newton, Massachusetts, is planning a campaign to raise $1,000,000 for additions.

Personal.—Dr. John O. Polak of Brooklyn delivvered an address at the Boston Dispensary on Relation of the Outpatient Department to Community Health.

Dr. H. R. Litchfield of Brooklyn has returned from abroad and resumed his practice in pediatrics.

Dr. H. Rabinowitsch of New York has been appointed attending physician to the dispensary of the Ocean Hill Memorial Hospital.

Dr. Louis Hausman and Dr. A. M. Rabiner have received appointments as adjunct neurologists to Mount Sinai Hospital, New York.

Dr. Carleton Simon, formerly of the New York City Health Department, is planning a statistical survey of the narcotic situation in New Orleans, for the health department of that city.

Dr. Jacob D. Smith, of Shelbina, Missouri, was guest of honor on his seventy-fifth birthday, at a banquet given by residents of the town. Dr. Smith has been in practice in Shelbina for fifty-three years.

Dr. John Girdwood of Baltimore has been appointed medical examiner for the Baltimore City Service Commission.

Society News and Notes.

Dr. John Leonard Kantor of New York addressed the Philadelphia Röntgen Ray Society on March 4th, on the subject of Ileal Stasis.

* * *

A meeting of the New York Microscopical Society will be held at the American Museum of Natural History on the evening of Friday, March 19.

* * *

A meeting of the Section of Anthropology and Psychology of the New York Academy of Sciences will be held on the evening of Monday, March 22, at the American Museum of Natural History.

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At the recent meeting of the New York Ophthalmological Society, the following were elected officers for 1926: Dr. John M. Wheeler, president; Dr. F. W. Shine, vice-president; Dr. John H. Dunnington, secretary and treasurer.

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The Western Physiotherapy Association will hold its annual meeting April 15th and 16th, at Kansas City, under the presidency of Dr. A. D. Willmoth, of Louisville. Dr. Richard Kovacs of New York is one of the speakers.

* * *

The twentieth annual banquet of the Women's Medical Society of New York State will be held at the Hotel McAlpin, New York, March 29th. Tickets may be obtained from Dr. Harriet F. Coffin, of 426 East Twenty-sixth Street, New York.

* * *

The annual meeting of the American Stomatological Association will be held April 5th, 6th, and 7th, at the New York Academy of Medicine. An address of welcome will be given by Dr. Samuel A. Brown, president of the Academy, and the response will be by Dr. Weston D. Bayley, of Philadelphia, president of the association. Dr. H. V. VanEtten, president of the New York State Medical Society,

will discuss stomatology and general medicine, and Dr. Alfred J. Asgis, of the International Stomatological Association, will describe the history of the movement. Dr. Joseph Colt Bloodgood of Johns Hopkins University, Baltimore, and Dr. George Reese Satterlee of New York are among those who will present papers, and several prominent members of the profession will be represented in other papers and discussions. The proposed educational programme for stomatological teaching will be considered. Physicians and dentists are invited to attend the meetings.

* * *

The West Side Clinical Society of New York has elected the following officers: President, Dr. Jerome Kingsbury; Dr. George A. Schnepel, vice-president; Dr. George Stevenson, treasurer, and Dr. William B. Giles, secretary.

* * *

In celebration of the eighty-fourth anniversary on March 30 of the first use of ether as an anesthetic, the Library of the New York Academy of Medicine has on exhibition some material having to do with the life and career of Dr. Crawford Williamson Long. Dr. Long discovered the anesthetic qualities of ether in 1842, but did not make generally known his discovery until after Morton and Wells had reported it. A statue is to be erected to Long in Washington's Hall of Fame, as a memorial to his discovery. The exhibit of the Academy of Medicine contains a copy of the original report on ether anesthesia made in 1849 by the Medical Society of the State of Georgia, of which state Dr. Long was a native, in which it is declared that his discovery is authentic. A series of articles on Dr. Long's life and work by his daughter, which have been appearing in the *Annals of Medical History,* are soon to be published in book form.

* * *

The Society for the Prevention of Cruelty to Animals has just issued a fourth book of lessons for Teaching Humane Education. There is an introduction by Dr. Paul Klapper, dean of the School of Education of the College of the City of New York, giving enthusiastic endorsement to the work of the society and of the book.

* * *

The year 1926 is the seventh anniversary of the founding of the League of Red Cross Societies. An interesting outline of its history and work, past and present, appears in the *World's Health* for January.

* * *

The New York Children's Aid Society has recently completed and made public the results of a five years' study of malnutrition among school children. The society conducts ten health center schools which are attended by handicapped children, and these schools have within the past five years brought back to health more than eight thousand children. The health building work has reduced undernourishment from 41 to 16 per cent. among the children in these schools, in spite of the fact that there has been in the five years a 75 per cent. turn over of pupils.

* * *

An American Health Congress, to be held in Atlantic City during the week of May 17, is being planned by the National Health Council in order to give health workers from all parts of the country a bird's eye view of the public health movement as a whole. Among the subjects to be covered in the discussions and addresses by authorities on the various phases of public health work are tuberculosis, cancer, heart disease, blindness, social and mental hygiene, public health nursing, preventable diseases, and health education for children and adults.

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The National Committee for the Prevention of Blindness has taken up its new headquarters in the building occupied by the other members of the National Health Council at 370 Seventh Avenue, New York City.

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The *World's Health* for January contains a world map showing the location of the medical stations already established and to be established according to the international scheme of the Norwegian Red Cross Society for improving the health of the sailor. In response to the mandate of 1924 of the General Council of the League of Red Cross Societies, the Norwegian Red Cross Society invites the maritime countries of the world to make use of its medical stations, and to forward this invitation to every sailor. The Norwegian Red Cross states that it also hopes that similar stations will be established in the large seaport towns throughout the world.

* * *

"Say it with pearls" is the title of a new film for children dealing with dental hygiene, which has been prepared and is now being shown under the auspices of the International Dental Health Foundation for Children. The film is in six reels, each of which presents in a manner interesting and attractive to youngsters a phase of dental hygiene.

* * *

At the meeting on February 2d of the French Academy of Medicine announcement was made of the perfection of a method of vaccination against lockjaw which can be applied at the same time as antityphoid vaccine, according to a notice in the *New York Times.* The announcement was made by the inventors of the method, Zoeller of Val de Grace and Ramon of Paris, young French scientists, who have already discovered a method of vaccinating against diphtheria. The new vaccine is said to immunize for life those who have received it. It was stated at the meeting that the antitoxins had responded without exception to all the tests to which they have been subjected.

* * *

The International Medical Society, recently organized in New York, gives its first official dinner to a foreign medical representative, Prof. Léon DuFourmentel, who is in the United States on a mission from the French government. The dinner will be given at the Columbia University Club, 4 West Forty-third Street, on the evening of Wednesday, March 24th, preceding a meeting at the New York Academy of Medicine, where Dr. DuFourmentel will present a paper on The Present Status of Plastic Surgery in France. The committee on arrangements is represented by Dr. Samuel J. Kopetsky, Dr. Thomas J. Harris, Dr. Henry Paul Forbes, Dr. Frank R. Herriman, Dr. Jacques Maliniak, and Dr. J. A. Lopez.

Book Reviews

RADIOTHERAPY

La Curiethérapie des Cancers. By Simone Laborde, Chef de Laboratoire de Radiologie au Centre anticancéreux de Villejuif. Paris: Masson et Cie., 1925.

Under the rather too narrow title of *Curietherapy,* Laborde gives us a very complete course of instruction in an art which as he says himself in an interesting *avant-propos,* is still largely in a state of flux, if not of experimentation, that of radiotherapy as we call it. The various rays—alpha, beta, and gamma of two varieties, hard and soft—are discussed from the viewpoint of physics, as emanations, and from the practical point of application in the treatment of cancer. There is a very complete study of the properties of radium. A chapter is then devoted to anatomical and clinical facts about cancer, its pathogenesis and diagnosis.

After discussing the biological effects of radiations, Laborde describes the various appliances and principles of technic. He then takes up the special application to various localities. Finally, there is a chapter on complications seen in the course of treatment of cancer, and on accidents due to the handling of radioactive substances, with suggestions as to necessary precautions.

Laborde has some interesting observations on cellular modifications, on latent periods, and on the progressive desensitization, or vaccination, of the tissues to radioactive substances, which add greatly to the scientific value of his short but most interesting work.

ECZEMA AND URTICARIA

Ekzem und Urtikaria. Klinik, Pathogenese und Therapie. Von Dr. Erwin Pulay. Berlin und Wien: Urban & Schwarzenberg, 1925. Pp. xi-191.

The pathogenesis of eczema and urticaria is considered from the viewpoint of modern experimental pharmacological studies. Both conditions may be due to exogenous and endogenous causes. There must be both a receptive condition and a provocative agent. The receptive condition for eczema consists in a hypersensitivity of the epidermis plus sensory nerve endings; the receptive condition for urticaria consists in a vascular hypersensitivity. The nervous hypersensitivity is produced by endogenous factors, usually abnormal metabolic processes. Hypersensitivity is expressed clinically in increased irritability.

For the production of eczema an exogenous stimulus must attack the epidermis, including a latent eczematous condition (potential, latent eczematous); this is produced by endogenous or exogenous sensitization. Endogenous and exogenous stimuli are positive sensitizers. If there is hypersensitiveness only to certain stimuli, whether chemical, mechanical, or toxic, we may speak of idiosyncrasy.

Endogenous stimuli result in urticaria in the presence of a vascular hypersusceptibility; dermatitis results with a hypersusceptibility of the epidermal cells; pruritus results from the hypersusceptibility of the sensory nerve endings: eczema results, finally, from hypersusceptibility of the epidermis and of the nerve cells.

Urticaria and eczema may result hematogenically. The latter will result if a former primary eczema has already existed. Primary eczema, however, is the result of exogenous trauma—usually scratching.

The clinical picture of eczema includes pruritus, usually produced hematogenically (endogenous), but there is also a pruritus that is produced exogenously, which also gives rise to eczema, as in pediculosis, scabies and other local infectious diseases of the skin (pyodermias).

Idiosyncratic eczema and urticaria are part of the picture of the general phenomena of sensitization. However, only a minor part of the cases of eczema and urticaria can be considered definitely as idiosyncratic.

Anaphylaxis and idiosyncrasy are similar in nature and can be differentiated clinically in so far as anaphylactic conditions are associated with eosinophilia and general symptoms of a vagotonic character, whereas idiosyncratic conditions are localized only in a certain system of organs or in a single organ.

Thus eczema and urticaria, in the final analysis, represent conditional changes in the albumin of the cell, being governed by the laws that control the normal and pathological processes of the cell. Reversibility and irreversibility of the reactions determine the possibility of cure and of chronicity. The irreversibility that occurs with every change in condition produces cellular memory, and hypersusceptibility takes root as increased irritability in the cellular memory.

The chapter on therapy is very complete and includes much detail. Röntgenotherapy is not considered favorably.

The bibliography of both eczema and of urticaria is given and includes the literature of the world.

BIOCHEMISTRY

Applied Biochemistry. By Withrow Morse, Professor of Physiological Chemistry and Toxicology, Jefferson Medical College, Philadelphia. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 958.

This is one of the best textbooks of biochemistry in English. There is a strong personal quality in the form in which the material is presented, and the experienced teacher is revealed everywhere, especially in some of the informal footnotes, which often contain information scarcely to be expected in such a text, for example, under Fats, it is mentioned that the Phoenicians discovered glass by noting that the sand under their campfires fused and made a transparent substance. Nevertheless, all these odd notes, together with the portraits of famous chemists, are useful hooks upon which the student may hang elusive facts not so fascinating and easily remembered as the example cited. The quotations as chapter headings show the scholar's interest also. The only criticism that can be made is that some of the cuts seem unnecessary. The picture of an alundum Gooch crucible, or that of a fluted filter, for example, occupies space that might well contain a little more chemistry. If the medical student absorbs half of the contents of this volume, he will be well educated in biochemistry, for no essential omissions have been

discovered, and as far as can be judged, the salient facts are simply and fully described in an easily understandable manner. The book can be highly commended as an admirable student text, as well as useful for the advanced laboratory chemist.

NEW REMEDIES

Formulaire des Médicaments Nouveaux pour 1925. Par Dr. R. Weitz, Préparateur à la Faculté de Pharmacie de Paris, Pharmacien des Dispensaires de l'Assistance publique. 31e. édition. Ancien formulaire Bocquillon-Limousin. Paris: Libraire J. B. Baillière et Fils, 1925.

Whether they order these matters better in France, as claimed, if we are not mistaken, by our Uncle Toby, is a question, when it is a matter of pharmaceutics and formularies. This little volume makes its appearance annually and is intended to keep us posted in the matter of new remedies, official and unofficial. Of late there has been such an unprecedented increase in the number of largely synthetic preparations, organic, inorganic, and of biological origin, that it is difficult to keep pace with all developments, either theoretically or in practical, therapeutic application. Weitz gives us the latest Parisian novelties, but our own modes are, one might say, a bit slighted. *A chacun son goût.* But we miss novatophan, fibrolysin, quinisal, and doubt if their respective places can be taken by *hyrganol Poulenc, dioséine Prunier,* or even *gouttes clin strychno-phosphorsinées.*

A BOOK OF PRESCRIPTIONS

Medical Formulary. By E. Quin Thornton, M.D. Twelfth Edition, Revised. Philadelphia and New York: Lea & Febiger, 1925.

The twelfth edition of this book of medical formulary claims to be revised to accord with the tenth revision of the *United States Pharmacopeia,* apparently a joke as there are preparations used in the prescriptions that have not been official for many, many years.

This book of prescriptions is perfectly absurd from the viewpoint of therapeutic or pharmacological advice in the present era of the rational treatment of disease. A few references to the contents of the book, selected at random, will show its ridiculous and ancient teachings. There are prescriptions written for morphine one eighth grain, in powders for the physician to dissolve in so many drops of water and administer hypodermically, entirely ignoring the fact of the many years of use of aseptic and cleanly hypodermic tablets. Also prescriptions are written for the druggist to put the ingredients into glass ampules, as though a druggist could do it! There is a prescription for injecting iodoform into the rectum of a baby who has diarrhea. There appears a mixture of gold and sodium chloride, sodium arsenate, barium chloride, extract of nux vomica, and extract of cannabis, in pills, for debilitated subjects with spermatorrhea. Potassium bromide is ordered in a capsule. There is a prescription for fluidextract of ipecac in five drop doses until nausea, for nosebleed. There is another for musk, mucilage of acacia, syrup and rose water to be given to a child with spasmodic croup. There are prescriptions containing seven ingredients. Enough has been said to show that the book should be a museum specimen rather than part of the armamentarium of a modern physician.

GONORRHEA IN WOMEN

Diagnose und Therapie der Gonorrhöe Bein Weibe. Sanitätsrat Dr. S. Jessner, Koenigsberg. Leipzig: Curt Kabitzsch, 1925.

This little paper covered volume is the twenty-fifth in the series of Dr. Jessner's *Dermatologische Vortrage für Praktiker.* It is written in brief, attractive style, without illustrations, but inclusive of all up to date methods of diagnosis and treatment. As is to be expected, the greater part of the work is devoted to the subject of therapy. One does not recognize anything startlingly new in the author's handling of the subject. Standard methods of therapy are advocated, among which is the intramuscular injection of milk and other foreign proteins in deep seated infections.

The German reading physician, particularly the gynecologist, will find much that is interesting and useful in this little work.

THE DEAFENED

Formulaire des Médicaments Nouveaux pour 1925. Par Dr. By Anetta W. Peck, Estelle E. Samuelson and Ann Lehman. With an introduction by Wendell C. Phillips, M.D. Paris: Libraire J. B. Baillière et Fils, 1925.

In the preface the authors tell us that this little book represents the gathered opinion of fourteen years of shared experience in a new phase of social work; "its opinions have been wrought out in spare moments, over the luncheon table, on professional journeys, and checked up by the day's work, day after day, year after year." Since the authors themselves are not in possession of the sense of hearing, they are in a position to give unique information and most valuable guidance in this new field of social work with the deafened.

In his introduction to the book, Dr. Phillips states that the day has passed when the otologist's full duty to his patient ends with a professional verdict, or with such treatment as can be administered for prevention or cure. "The peculiar psychology which accompanies the deafened condition creates the necessity for something more upon the part of the progressive otologist. . . . He should become his patient's neighbor in the highest sense, for by instituting the proper measures for rehabilitation, untold mental suffering may be avoided." The purpose of this book is to increase and strengthen a helpful interchange of work between the otologists, the educators, and the various forms of social service for the deafened.

ARMY MEDICINE

The Medical Department of the United States Army in the World War: Medical and Casualty Statistics based on the medical records of the U. S. Army, April 1, 1917, to December 31, 1919, inclusive. Prepared under the direction of Maj. Gen. M. W. Ireland, the Surgeon General, by Maj. Albert G. Love, M.C., U. S. Army. Washington: Government Printing Office, 1925. Pp. 1368.

This is Part II of Volume XV on Statistics. Part I of this volume was called Army Anthropology. This Part II completes the publication of war statistical records of the Surgeon General's Office, with the exception of special statistical material on distinct aspects of the subject. The volume is a testimonial to the tremendous amount of work and the careful and accurate recording of it necessary to the

making of such a record so that it may be practicable for comparatively ready reference use, as well as for the student or the physician professionally interested in the matter he tabulates.

The data included in the tables may be roughly classified as, 1, strength data and estimates, and, 2, sick and wounded data. A preliminary section deals with methods of assembling data in the Surgeon General's Office, followed by an explanation of the terms and methods used. An appendix gives extracts from the Manual for the Medical Department, sick and wounded reports from the American Expeditionary Forces, sick and wounded forms, report cards, etc. The preface states that for the statistical tables in this volume approximately five million statistical cards were prepared.

THE CHILDREN OF PHYSICIANS

Medical Heredity; Distinguished Children of Physicians (United States, to 1910). By William Browning, Ph.B., M.D. With an introduction by Charles B. Davenport, Ph.B., A.M., Ph.D. Baltimore: The Norman, Remington Company, 1925. Pp. 250.

This is a work unique of its kind, although analogous albeit limited inquiries, the author tells us, have been undertaken abroad. The book may be defined as a study of the intellectual tendencies of medical training and descent. The larger part of it is taken up by a classified schedule of 6,500 names with data, of sons and daughters of physicians who have played a significant or at least a useful part in the various professions, business, sociological work, societies (social, fraternal, secret), public life, military life, the navy, adventure, and miscellaneous. This section, which is very full and shows an almost incredible amount of patient research over vast areas of biographical material, is followed by comments, further statistical tables, and summaries of results. It may be of interest to refer briefly to a few of these:

More daughters of physicians are found in successful authorship than in any other line of work. They are prominent also in fine arts, in philanthropy and humanitarian work, in educational and library work, and in literature, in which last they exceed the men in number. Many sons of doctors are, most naturally, sculptors. There are quite a number of musicians and singers whose fathers were physicians, including Frank and Walter Damrosch, Marguerita Sylva, Godowsky, Fritzi Scheff, Kreisler, and Sophie Braslau. The actors and dramatists are not nearly so numerous; among them are Sir Charles Wyndham, Sol Smith Russell, Sothern, Augustus Thomas, Elsie DeWolfe and Rachel Crothers.

The list shows very few inventors. Manufacturing and business show few sons of the medical profession, but finance has quite a long list, including 120 bank presidents and heads of twenty insurance companies. Philanthropic pursuits, administration of institutions, educational activities, letters and journalism, statecraft, law, and the sciences, with the exception of mathematics, all have a large and successful following among sons of physicians. Adventurous pursuits, including exploration, discovery, travel in new lands, and pioneering of all kinds have lured many. Citations of this kind could be made indefinitely, but the book must be read and studied to gain a knowledge of its unusual interest, and the tremendous amount of work that has gone into its preparation.

Appendices list others of medical rearing, grandchildren of physicians, and long lines of continuous medical descent, including five, six, seven and eight consecutive generations of doctors. Dr. Charles Allen Porter, professor of clinical surgery at Harvard Medical School, traces his ancestry through eight generations of physicians, back to Dr. Daniel Porter, born in England, licensed in 1654, who practised in Farmington, Conn. A final appendix describes the Role of Doctors in the Lincoln Administration, an article reprinted from the *Medical Record* of October 28, 1916. Another interesting article by Dr. Browning on a phase of this same subject appeared in the *Medical Record* for October 26, 1918, under the title Some of Our Medical Explorers and Adventurers.

From this brief review of the contents of *Mental Heredity,* it is evident what value the book has, not only to physicians, but to all interested in biology, genetics, eugenics, vocational guidance, heredity and sociology in general. The style is informal and often humorous, making the book good reading in addition to its scientific interest. There are many bibliographical references to articles that have appeared in various scientific publications on medical heredity and related subjects. "Whether or not blessed with children of your own, there is a natural curiosity to see how the other fellow has made out," writes Dr. Browning in outlining the uses and purpose of his book—and this he has enabled the doctors of America to do.

Medicoliterary Notes.

Dr. Miller Reese Hutchison, consulting engineer and constituent member of the Naval Consulting Board, and for sixteen years chief engineer of the Edison laboratories, is quoted as having devised a method of carrying lines to sinking ships by means of a large kite, and also of having adapted the breeches buoy so that it may be used for saving the crews of sinking ships. Dr. Hutchison is the inventor of the automobile klaxon, the acousticon and various other devices.

* * *

The estate of the late Colonel Edward M. Knox, the hatter, near Ridgefield, Conn., has been offered for sale to the directors of the Physicians' Home, Inc., as the basis of the Eastern branch of the Home. The estate comprises three hundred acres, a mansion, and various farm houses and other buildings. Several other properties have also been offered to the directors including another in Connecticut comprising three hundred acres, and one near Winchester, Va., of the same size.

* * *

Thomas Seltzer announces for early publication a novel, *The Sunken Garden,* by the child poet, Nathalia Crane, of Brooklyn. The young author, rather than entrust her book to the tender mercies of the professional blurb writer, says the *New York Times,* her written her own description of the novel as follows: "The tense story opens at dusk with an ox eye tornado devastating a section of the mid-African coast. Lanterned by the lightning, we gain a glimpse of a youth torn from the shore of the mainland and washed upon the crags of an outlying islet. During the night the skiff of a wrecked sailing yacht drifts through the hooded entrance of the islet's lagoon. In the skiff there is the one survivor of the sea disaster, a young English girl of rank and culture. Thereafter we have the heroine and hero in a made to order Paradise, the damsel armed with

modernity and the youth the last living relic of a lost civilization. It is an idyllic tale, but packed with adventures. For in this bewitching sanctuary security is threatened by a danger dormant in the sunken garden. In this secret basin of natural loveliness the python regius, a monstrous ophidian, haunts the rim of a sullen pool. The magic of the book rests in the fact that from the first page there is a recession from all conceptions of present day life. Paul and Virginia were infants in swaddling clothes compared with the castaway and her island escort. As for Robinson Crusoe, well, he was a bachelor. In *The Sunken Garden* there is a complete cast, although some have four legs and one principal none at all."

* * *

According to British railway reports, in 1924 only one passenger was killed in a train accident. This record gives to Great Britain the world leadership in railway safety. In this century there have been two years—1901 and 1908—without a fatality, and in 1909 as in 1925 one only was killed; in 1916, 1919 and 1923 there were three deaths only. This was the case in spite of the fact that approximately one billion and seven hundred millions passenger journeys are made by train annually.

* * *

Williams and Wilkins, the publishers, announce that the title of the *American Journal of Electrotherapeutics and Radiology* has been changed to *Physical Therapeutics* on account of the unnecessary length and cumbersomeness of the former.

* * *

Recent announcement has been made of the formation in the Pennsylvania Department of Labor and Industry of a section which will deal with the problems of women and children in industry. This will be done through investigation into the status of working children within the state and active cooperation with the inspectors of the department to prevent violations of the child labor law within the state.

* * *

A new edition of James Branch Cabell's *Figures of Earth* has been issued by Robert M. McBride & Company, illustrated by Frank C. Pape, who was so successful in the well known English edition of *Jurgen*. The new edition of *Figures of Earth* contains a hitherto unpublished preface by the author.

* * *

Among the lecturers announced for the spring term of the New School for Social Research are Dr. John B. Watson, Dr. Ira S. Wile, and Dr. Frankwood E. Williams.

* * *

Lolly Willowes; Or the Loving Huntsman, by Sylvia Townsend Warner, is the story of a spinster who sells her soul to the devil. David Garnett, who is credited with having discovered the novel, writes of its author as follows: "No one would willingly risk having a waxen image of himself held by Miss Townsend Warner in front of a slow fire. Though she is not as far as I know a witch, she lives alone with a very large black dog . . . but what of that!"

* * *

In an effort to get at the real nature of its problems, Trinity Church, Pittsburgh, recently held an institute on the subject of human motives, according to the *Mental Hygiene Bulletin*. It consisted of a series of twenty-four popular addresses on present day problems, a number of which were devoted to mental hygiene aspects. The institute was held at the church and the addresses were broadcasted by radio.

* * *

Dr. Phyllis Blanchard, psychologist of the All Philadelphia Child Guidance Clinic, has contributed an interesting article on the dreams of children and their significance to the Sunday *New York Times* for February 21st.

* * *

A Few Notes Regarding Psychoanalysis is the title of a pamphlet recently issued by the Fellows Medical Manufacturing Company, Inc., of New York City. The preface states that the pamphlet is for the purpose of putting the general practitioner in possession of a working knowledge of psychoanalysis, by presenting the practical working essentials of the subject, by which the physician may introduce himself to its simpler practice, and so form a stepping stone to a more extended study of psychoanalysis.

Robert Quillen, a humorous writer of South Carolina, who recently attracted considerable attention by erecting on his front lawn a monument to Eve, the first woman, has applied for a $10,000 life insurance policy to be used as a trust fund in perpetuating the monument. Under the terms of the application flowers are to be laid regularly on the monument, the lawn mowed, trees pruned, and an annual bath given to the marble obelisk.

* * *

The transactions of the first international Conference on Sanitary Engineering held in London in July, 1924, have recently been published in book form by the Institution of Sanitary Engineers, London.

* * *

After a fixed date all Chinese women under thirty whose feet are still bound will be taxed a sum equal to three dollars a month. This is an effort on the part of two Chinese militarists, not only to add to the country's revenue, but to abolish a vicious custom which has persisted from time immemorial in China, in spite of many comparatively modern attempts to create feeling against it and so in time do away with it. Legend has it that the custom started in early times to prevent women from running away to seek adventures. It has recently been estimated that there are still seventy million pairs of deformed feet in China, and that in the coming generation there will probably be more.

* * *

From societies for the prevention of cruelty to animals we should advance to brotherhoods for the spreading among men of *correct etiquette* toward animals; for only so may we begin to glimpse a broader meaning in our sports.—*Langworthy Taylor in The Saddle Horse.*

* * *

Idiot Man, by Prof. Charles Richet, winner of the Nobel prize for physiology in 1913, is a recent publication of Brentano. It is the author's contention that man, both civilized and uncivilized, is far more stupid than the animals, and this he proceeds to point out in his new book.

* * *

To those of our profession interested in the history of medicine we would call attention to the publication of fifteenth century incunabula published by E. Droz, 13 Avenue Félix Faure, Paris (XV^{e}), as they are limited to five hundred copies each and not being advertised are known to few.

Of the incunabula pertaining to medicine which were issued last year there are two, namely, *Remedies Against the Plague,* compiled by E. Droz and Dr. Arnold Klebs, and *La Clef des Songes,* edited by Maurice Hélin. The latter work will be found of immense historical interest to psychologists as the subject of dreams holds an important place at present in this branch of medicine.

A prospectus of the forthcoming medical incunabula of the fifteenth century may be had by writing directly to the publisher at the above address.

* * *

The bicentenary of the birth of John Howard, the British prison reformer, was celebrated on January 20th at a service at St. Paul's London, followed by a meeting at the Fishmongers' Hall. The celebration was under the auspices of the Howard League for Penal Reform, which is carrying on the work begun by Howard. "Howard, whose personality is so shadowy, was a very remarkable man of extraordinary strength of will and persistence along the line of reform he marked out for himself," says the *Manchester Guardian.* "Always in delicate health he spent the greater part of his life in incessant and often dangerous travels of discovery, visiting prisons all over his native land and the continent, and slowly building up a mass of terrible evidence about their condition which formed the starting point for generations of reformers." Howard is said to have travelled fifty thousand miles, notebook in hand, visiting prisons, hospitals, lazarettos, schools and workhouses, and to have spent thirty thousand pounds sterling of his fortune in so doing. He lived upon vegetables and water, and a little bread and tea, and in spite of his poor physique came through countless hardships and dangers of infection safe until he died of camp fever in Russian Tartary.

Abstracts from Current Literature

DERMATOLOGY

Treatment of Epithelioma of the Face and Eyelid.—C. A. Simpson (*Virginia Medical Monthly,* September, 1923) states that the cosmetic results obtained with the x ray or radium in epithelioma of the lid are not approached by any other therapeutic agent. To secure a cure with either of these methods is to leave the patient's lid in almost as perfect a condition as if no neoplasm had ever existed. He regards radium as superior to the x ray, having witnessed a number of instances of failure of resolution upon intensive treatment with filtered x ray, often followed by prompt destruction and healing of the lesions with a triple strength radium plaque. The flat plaque, with the radium element covered with a rubber composition which filters out less than five per cent. of the beta rays, offers many advantages over the radium pack or needles. A metal capsule or needle filters out ninety per cent. of the useful beta rays. If the malignant lesion is extensive or very deep, however, the hard gamma ray is required for results; here it is better to employ the metal walled needles. The radium plaque also avoids the conspicuous and persistent local trauma and caustic effects always found at the seat of implantations of radium emanation seeds or radium needles. Timid and nervous old patients are far less inconvenienced by the adjustment of a small radium plaque, of the size of a finger nail to the lid with the patient seated in the waiting room or even in his own home than by being placed on an operating table and subjected to blindfolding with lead foil, etc., amid the din of whirling machinery.

Efficiency of Skin Antiseptics.—M. B. Tinker (*Annals of Surgery,* October, 1925) asserts that:

1. The superficial and deeper layers of the skin of protected areas in cleanly individuals are frequently free from bacteria.
2. If the skin be smeared with resistant nonpathogenic bacteria, soap and water scrub alone for two minutes will make it free from bacteria in thirty per cent. of cases.
3. Careful ward preparation with ether swab on the operating table is capable of giving skin free from bacteria in seventy-five per cent. of cases, and of reducing the colonies in the remainder to a maximum of three.
4. The selective action of antiseptics is so important that it seems wiser not to depend upon any single antiseptic for skin preparation.
5. Iodine preparations, picric acid, and alcohol alone which seem still to be the chief reliance in a number of hospitals, are too inefficient under ordinary clinical conditions to be depended upon for routine skin disinfection.
6. Acriflavine five per cent. proved most efficient in this series of tests, but probably its use combined with other dyes and antiseptics might be desirable. The chief drawback to the use of the dyes is their almost prohibitive cost.
7. It would probably be safer not to discard altogether the use of some of the older relatively efficient antiseptics until those used to supplant them have been given thorough clinical as well as laboratory tests in a number of hospitals.

Early Treatment of Superficial Burns.—I. S. Raydin and L. K. Ferguson (*American Journal of Surgery,* February, 1925) regard toxemia as the chief cause of the high mortality in burns; hence the prevention of its occurrence forms the most important part of the treatment. The toxin is gradually liberated from the damaged tissue and taken up by the blood stream. To combat the severe symptoms which develop a method after Robertson's of removing the circulating toxin by exsanguination, replacing the blood volume and diluting the remaining toxin by transfusion, is suggested.

As soon as possible after the patient enters the hospital all clothing is removed and an electric cabinet is placed over the bed. Although children under it are frequently irritable for the first few hours, they quickly become accustomed to the radiant warmth and later are much upset when removed, even temporarily. The heat is kept at 100° F.

As soon as the patient is put under the cabinet, the burned area is covered with gauze saturated with a solution of one half per cent. novocaine, which has had added to it ten minims of 1:1000 adrenalin to each fluid ounce of novocaine. When the patient reacts from the shock, the area of the second degree burn has sufficient anesthetization to allow one to remove the burned skin, open the blebs and remove the contained fluid with the superimposed skin without causing pain. If the burn is of the third degree, we anesthetize the patient within twenty-four hours and do a careful débridement. Ether anesthesia was used in the very young children, while nitrous oxide and oxygen was employed in older children and adults.

In the majority of cases fluid was administered only by mouth, but in those cases where rapid introduction was deemed necessary, the intravenous method was utilized. We do not believe in the use of hypodermoclysis in these cases, since it is not painless by any method.

The novocaine packs are continued for from forty-eight to ninety-six hours, depending upon the extent of the burn and the time at which débridement was performed.

When these are removed the area is sprayed every three hours with a fresh two per cent. solution of dichloramin-T. Because of the crusts which form over the area when dichloramine is utilized, it is necessary to bathe the patient daily to remove these.

In the less extensive burns we used only packs of normal saline solution and received such favorable results that we intend to use these altogether in the future instead of the dichloramine.

The diet is what we term light diet, reinforced, so as to supply as many calories as possible in an easily assimilable diet. The major caloric value should consist of carbohydrates so as to furnish available glycogen for the organism.

Should a patient be admitted after the toxemia has developed or should symptoms of toxemia develop in a case under treatment, we have practised exsanguination transfusion with considerable success. In the adult we have made no attempt to completely exsanguinate the patient, and in the child we have removed about twenty c.c. per pound of body weight. The blood was usually withdrawn from the median basilic vein and given through the saphenous vein. Where the signs of circulatory collapse appeared early, normal saline was given while the exsanguination was progressing.

If the burn was over a crease of a flexor surface, early extension or splinting was resorted to.

As soon as healthy granulations appeared in the extensively débrided cases skin graft was practised. We believe that better results are to be obtained from the use of Thiersch or whole thickness skin grafts than from the pinch grafts which are easily strangulated by the exuberant granulation tissue.

Experimental Primary Epithelioma from Micrococcus.—J. W. Nuzum (*Surgery, Gynecology and Obstetrics,* March, 1925) reports that from the result of six years' intensive bacteriological study it may be concluded that there is regularly present in both early human breast cancer and in the transplantable Crocker carcinoma No. 11 and in tumor No. 180 of the mouse the same microorganism. This micrococcus which belongs to the streptococcus group is also present in the metastatic growths in the lymph glands as well as in the cutaneous nodules in patients suffering from recurrent breast carcinoma. It has been isolated from primary breast carcinomata less than one centimeter in diameter and at a time so early in the evolution of this disease as to exclude the probability of its being a secondary invader. It has also been isolated in pure culture from a very early case of acute carcinoma in the human lactating breast where it was possible to determine the earliest histological lesions of breast cancer. The microorganism is readily isolated in tissue ascitic fluid media overlaid with solid petrolatum or paraffin oil, or still more rapidly in tall tubes of dextrose broth under partial anaerobiosis.

When injected through the nipple ducts into the breast acini of female dogs, two animals out of five surviving a sufficient length of time developed genuine carcinoma of the breast. In one animal the tumors regressed. The second dog died with generalized carcinomatosis secondary to a huge primary breast cancer.

Finally, repeated inoculations of this micrococcus into the skin of the groin of an elderly man, the subject of previous epitheliomata, resulted in the development of a typical squamous cell cancer.

While the results of these inoculations may be interpreted differently and the explanation of a chronic nonspecific irritation brought forward, the obvious fact cannot be denied by those entitled to an opinion that genuine cancer with metastases has been produced in the dog and primary cancer in man by repeated inoculations of pure cultures of the microorganism so constantly present in human breast carcinoma.

Since it has been shown that cancer may be produced by the long continued irritant action of bacteria in suitable subjects it is to be hoped that this work will stimulate others to investigate the micrococcus present in early human breast cancer which has quite generally been regarded as sterile.

Endocrine Glands and the Dermatoses.—A. Winstel (*Revue Française d'Endocrinologie,* January, 1925) collects a large number of reported cases in which organotherapy has been used with success, and pronounces the treatment in all to have been empirical. He endeavors in consequence to establish a scientific basis for the employment of endocrine extracts in skin disorders by subjecting his patients to physiological tests, including the cutaneous vasomotor reactions; the tests of vagosympathetic equilibrium with pilocarpine, atropine, adrenalin, and amyl nitrite; the functional gland tests of Goetsch, Porak, Parisot and Richard; tests of carbohydrate tolerance and of basal metabolism. He reports only those cases where a single gland alone could be incriminated and where administration of the appropriate single gland extract produced a complete cure. In this way he succeeded in attributing two cases of psoriasis, one of eczema, three of alopecia, one of prurigo, and one of bullous erythema to a hyperthyroid origin; one of alopecia to hypothyroidism; one of eczema to ovarian insufficiency; and two of eczema to pituitary insufficiency. While many cases examined failed to respond to the tests applied, the author considers his positive results sufficient warrant for holding that in some instances an undoubted causal relation exists between endocrine disturbances and skin disorders.

Skin Infection of Rabbits with Hemolytic Streptococci.—Thomas M. Rivers (*The Journal of Experimental Medicine,* February, 1925) describes skin lesions in rabbits produced by a hemolytic streptococcus isolated from a human case of erysipelas. The lesions produced by intradermal infection were of two sorts, phelgmonous and erysipelas like. An attempt to produce an immune serum by repeated inoculation of streptococci into rabbits, not as is usually done by injecting the bacteria into the blood or peritoneal cavity, but by intracutaneous inoculations, was successful, in that a true immune serum capable of warding off the injurious action of the streptococci on the skin had been developed in response to repeated intracutaneous inoculation of the organism.

Lime Dermatitis.—W. J. O'Donovan (*Lancet,* March 21, 1925) reports some cases to show that lime may play an important part in the causation of local and of generalized grave dermatitis in various occupations. Lime dermatitis is now looked for in a wide field of industrial life. The patient's trade label is often a most insufficient guide to this special industrial hazard. A small group of cases is recorded amongst "tunnel miners" not hitherto reported as liable to lime dermatitis. The types of dermatitis that may be seen are vesicular eruptions or cheiropompholyx, lime holes, seborrheic eczema, exfoliative dermatitis, intertrigo, erythrodermia, pustular follicular dermatitis, and septal perforation. Oversweating or abnormal dryness of the skin are predisposing factors. Preventive measures consist in frequent changes of all dust-laden underclothing, alternation of employment on to lime-free work, and the nightly application of emollient grease to the skin of the face, hands, and forearms.

Morbilliform Luminal Eruptions.—G. Milian (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* July 23, 1925) deems certain erythemas following on the ninth day after exhibition of luminal to be analogous to the eruptions he had previously described as following nine days after injections of arsphenamin or neoarsphenamin. These eruptions are not due directly to intoxication by the drug, but are infectious, the drug bringing into activity an infection, such as measles, which would otherwise not have manifested itself. During the war, such eruptions appeared in epidemics exclusively among men who had received arsphenamine or neoarsphenamine. A syphilitic woman, presenting a morbilliform eruption on the ninth day after an injection of neoarsphenamin, infected three nurslings, who developed measles. Along with the ninth day eruption there appears frequently a characteristic, pronounced swelling of the glands, showing that the condition is actually measles and not simply a morbilliform eruption. Measles from which an individual has suffered some years before may be reawakened—like a species of Herxheimer reaction—by drugs. A recently acquired infection, generally tonsillar, which would not otherwise have manifested itself clinically, may be similarly caused to develop. In these phenomena rupture of immunity may be a factor, especially when the immunity is weak, as when the infections have been mild or been experienced a long time before. Further administrations of the drug concerned cause fresh eruptions, but with diminishing intensity, until the fifteenth or twentieth day, when no eruption results, immunity having become reestablished. The endocrinosympathetic system may play an important rôle in the production and maintenance of such immunity, and hence in the origin of these eruptive manifestations. Arsphenamine and luminal are to be regarded as selective poisons to the endocrinosympathetic system.

Organotherapy in Psoriasis.—Spillmann and Carillon (*Bulletin de la Société française de dermatologie et de syphiligraphie,* July, 1925) report nine cases of psoriasis cured by organotherapy. In each patient careful endocrine tests were made and the selection of remedies made in accordance with the results. Tests with atropine, adrenalin, amyl nitrite and pilocarpine in each case showed disturbances of vagosympathetic tone, with varying predominance of the sympathetic or parasympathetic system. In three cases these disturbances were of endocrine origin, while in six they seemed to be idiopathic. Of the three endocrine cases, two showed dysthyrodism and one, hyperovarism. In the dysthyroid cases thymus extract failed, but recovery followed the use of pituitary extract. In the hyperovarian cases, thymus extract and sistomensine used separately failed but when combined yielded excellent results. In the six diopathic cases of vagosympathetic imbalance, comprising three each of vagotonia and of sympathicotonia, thymus extract alone proved successful. That the vagosympathetic disturbances were actually related to the skin condition was suggested by the fact that upon repetition of the tests in two patients after they had recovered the imbalance was found to have disappeared. In a more recent case showing sympathetic hypertonicity pills of pilocarpus were used with encouraging results. The above cases show that organotherapy is an important procedure in psoriasis. Where endocrine tests are negative, thymus extract seems to be the indicated remedy.

The Role of Focal Infections in the Etiology of Eczema.—John W. Visher (*American Journal of Medical Science,* November, 1925) reports five cases of eczema which were apparently caused by focal infection.

In the first three cases, recovery followed the removal of abscessed teeth. In the fourth patient, the eczema ran its course concurrently with an acute pharyngitis. In the last case, rapid subsidence of the eruption accompanied improvement of infected pelvic viscera.

2. Careful search was made in each case for other possible causes of the skin lesions, but none were found.

3. Local antipruritic treatment in four cases had no effect upon the skin lesions, aside from decreasing the scratching, and improvement seemed to occur in spite of, rather than because of it.

Lupus in Its Surgical Aspects.—W. S. Handley (*Annals of Surgery,* January, 1925) offers evidence to show that lupus is not a skin disease, but a disease of the lymphatic system not restricted to the skin, and governed as to its mode of spread by the facts of lymphatic anatomy. In support of this theory the following points are maintained and discussed.

a. Lupus is a nodular disease.

b. The spread of lupus is centrifugal but discontinuous.

c. In lupus nodular deposits may appear along the course of the trunk lymphatics.

d. Lupus may affect the glands and the internal organs.

e. Lupus is intractable by skin excision.

As regards treatment the author says:

In a Hunterian lecture in 1921 I expressed my general views on the treatment of lupus. Since I have seen no

reason to modify them, the succeeding section of this paper is a transcript from that lecture.

It is in the surgical treatment of lupus that my observations seem for the present to find their practical application. It is very necessary to recognize the existence around the apparent area of lupus of a zone of apparently normal but really infected skin. Even in the chronic forms of lupus, this zone appears to be present. The knife of the surgeon must, if possible, circumscribe this area if he wishes to avoid recurrence. Even more important is it to recognize the fact that excision of the skin alone is an irrational procedure. It is almost certain that the underlying area of subcutaneous tissue is riddled with microscopic tubercle in the form of tuberculous lymphatics, and that a corresponding area of the lymphatic plexus upon the deep fascia is infected. Whenever possible, therefore—and it can be done in all cases of lupus of the trunk and extremities—an area of deep fascia at least as large should be taken away in one piece with area of skin excised. The test of the completeness of the removal is that muscular tissue should be seen in the floor of the resulting wound.

Nonsurgical Treatment of Carbuncles.—H. S. Black and P. Black (*International Journal of Medicine and Surgery,* October, 1925) state that under x ray therapy the cosmetic results are better; the pain is relieved in a shorter period of time; there is less trauma to the tissues; there is quicker healing in the small carbuncles and no longer time required for the larger ones as compared with surgery; most of the patients can be treated as ambulatory ones; and the mortality rate is reduced, as shown in the cases reported in literature as well as our own.

As to the method of treatment the technic is as follows: They used a 9 inch spark gap, five milliamperes, a 12 inch skin distance and a filter of one half millimetre of copper. The time of exposure varied from twenty to thirty minutes in our later cases, but in our first few we did not use so long a time, as we were careful not to do harm. This latter reason explained why we had to give a few of our cases more than one treatment, though the longest period of time in any one case totaled sixty-nine minutes. This patient should have had two applications of twenty-five minutes each, and our result would have been more rapid and the number of treatments would have been reduced from five to two. We have learned not to hesitate about giving a large enough dose at the initial sitting, always allowing the rays to penetrate well around the lesion, for it will relieve the surrounding inflammation and lymphangitis. In none of the cases was there an occurrence of spurious carbuncles subsequently which is not infrequent after surgery.

Epitheliomas in Sebaceous Cysts.—H. D. Caylor (*Annals of Surgery,* July, 1925) finds that:

Sebaceous cysts can develop in almost any portion of the body covered by epidermis, the palms included. They are retention cysts caused apparently by obstruction of the duct of the gland and accumulation of the sebum. All sebaceous cysts should be removed, for they may become the site of a malignant tumor. Approximately 3.44 per cent. of the sebaceous cysts in this series eventually became malignant. The lesion should be excised if it is ulcerated, and excision is imperative if the lesion recurs. Obviously all sebaceous cysts should be examined carefully for malignant change. Heredity was apparently an etiological factor in the development of epitheliomas in the cysts studied since 58.33 per cent. of the patients with epitheliomas gave a family history of malignance, while only 13.83 per cent. of the patients with simple uncomplicated sebaceous cysts gave a personal or family history of malignancy. Local irritation, while it may be an item in causing the development of malignant change, was not the most important factor.

Skin Tests, Asthma and Idiosyncrasy.—The following conclusions are drawn by F. G. Chandler (*Lancet,* June 6, 1925):

1. Group testing is efficient if the solutions employed are not too weak.

2. Proteins, it appears, will keep active in solution with 0.25 per cent. or 0.5 per cent. carbolic for at least two years, and this is a convenient method of keeping test group solutions.

3. The best method of preparing proteins depends upon the use to be made of them. As a general rule it may be said that the powder form is the most satisfactory. Often, however, the powders become very insoluble, in which case precipitation and immediate resolution is the best method.

4. It appears that many of the substances used can be boiled without altering their activity.

5. The existence of a dermal reaction, even a well marked one, must not be taken as proof positive of an etiological relationship between the substance producing this reaction and the symptoms of the patient, though it must not be ignored without consideration.

6. It is too early to dogmatize about the therapeutic application of the discovery of an idiosyncrasy.

7. To sit down to a case of some obscure malady with a miscellany of test proteins is not likely to yield any useful result, but to investigate any case of strongly suspected idiosyncrasy, particularly from the point of view of desensitization, will yield valuable material for the study of idiosyncrasy and its treatment.

Radium Treatment of Vascular Nevi.—Charles Mallory Williams and Eugene F. Taub (*Archives of Pediatrics,* June, 1925) asserts that radium is the best single agent in the treatment of vascular nevi. Such types of nevi as the flat, superficial vascular nevi, level with the skin and which cannot be made to disappear on pressure, and the flat, deeply infiltrating vascular nevi, level with the skin, that usually cannot be made to disappear on pressure, are best treated with either the Kromayer light under pressure or the actual cautery point. The raised, soft vascular nevi, which are cavernous angiomata and are sometimes pulsatile and erectile, and the deep subcutaneous and submucous angiomatous tumors, are indications for either the cautery or surgical excision. Radium, though time consuming and expensive, may be employed before surgery mav be deemed advisable. Furthermore, it is possible to apply it in locations, as for example, eyelid, lip, etc., where other methods are contraindicated. Bleeding is not a contraindication to radium, in fact it may be promptly checked and the healing of ulcers (not infected) may be promoted. Adults respond poorly to radiation, comparatively speaking—lesions which in infancy would have rapidly melted away require tremendous dosage before being favorably influenced.

FRACTURES

Elbow Fractures and Dislocations.—I. E. Siris (*Surgery, Gynecology and Obstetrics,* May, 1925) summarizes his findings as follows:

Children have excellent reparative powers in fractures.

Perfect anatomical approximation of the fragments is not always essential for functional recovery. Displacement and overriding of fragments will often result in a good functional limb and complete restoration of the bony contour.

The best results are obtained by immediate reduction under an anesthetic with the aid of the fluoroscope.

Partial immobilization with adhesive and early active motion will reduce swelling, increase muscular tonicity, and prevent muscular spasm, exuberant callus, Volkmann's ischemic paralysis and myositis ossificans.

Passive motion with or without an anesthetic and active massage retards progress.

Musculospiral and ulnar paralysis accompanying and following fractures about the elbow is not always permanent.

Myositis ossificans will disappear with the discontinuation of trauma to the brachialis anticus.

Open operations in children are not indicated as good functional limbs will follow displaced fragments and infections are very prone to follow open operations.

Compound fractures are best treated by débridement, Carrel-Dakin sterilization, suspension in flexion by adhesive or in a flexed Thomas splint, to be followed by secondary suture or granulation with the institution of early active motion.

Active Motion in the Treatment of Fractures.—J. L. Yates and G. W. Stevens (*Annals of Surgery,* October, 1925) give reasons to show why bone repair occurs more promptly and advantageously, if active motions are employed. Also evidence to prove that cooperation with the natural reparative processes leads to earlier healing and more complete functional recoveries than are obtainable by the orthodox procedures wherein immobilization is enforced. Progress made in treatment is commensurate not only with reductions in mortality rates, but also with restrictions in durations of immediate and in extent of ultimate disabilities. Advances are noticeable when therapeutic procedures coop-

erate with natural processes which include resistance, defense, growth and repair. Treatment of fractures, so as to cooperate with Nature's methods of healing is the one way to obtain better results. Active motion is a constant factor in recovery and no recovery is complete until unrestricted active motion is possible. The earlier active motion is instituted the more prompt and complete are recoveries, provided a development of deformities is prevented during the healing process. Methods of treating fractures should be designed to interfere the least with general activities and to permit the earliest resumption of active motion by the structures involved in the injury.

Fractures and Their Roentgenological Interpretation.—R. H. Stevens (*International Journal of Medicine and Surgery,* January, 1925) discusses in detail the following points:

The bones of the hands and feet show a considerable number of anomalous variations and many of them suggest fractures, so that in case of injury it is an easy matter to make a mistake in interpretation, if one is not fully informed of the possible developments. There are, of course, anomalies of the spine, ribs, and other bones.

Sesamoid bones vary much in number and appearance and occasionally confuse the uninitiated.

The normal development and position of ossification centres, of course, must be constantly in mind in diagnosing injuries in persons below twenty-one years of age.

In the skull we have the greatest difficulties because of its globular form and its variable markings from channels of bloodvessels in its diploë and inner surfaces. Unless röntgenograms are taken in many different positions, the central beam of rays may not fall in such a manner upon a fissure fracture as to demonstrate it upon the plate. It is often difficult to differentiate the latter from the normal channels of bloodvessels. The slightest motion of the head during exposure to the rays will cause sufficient blurring of the plate to obliterate tracings of fine cracks and fissures.

Pathology of bone often results in fracture without much or any violence, and this condition must be differentiated from fractures of normal bones.

Old fractures must be differentiated from recent fractures to protect employers from unjust damages. Where, when, and to what extent we may expect callus, is of great importance.

Fractures of the Radius.—S. W. Boorstein (*American Journal of Surgery,* March, 1925) concludes as follows:

1. Reduction of a fracture of the lower end of the radius is a serious operation and should be carefully performed, and not delegated to the youngest intern or appropriated by the inexperienced general practitioner.

2. The typical deformity is that the lower end of the radius is displaced in four ways, viz., backwards, upwards, to the radial side, and rotated backwards, and the styloid process of the ulna is usually broken off.

3. To obtain a good result two things are of paramount importance: correction of the displacement and early mobilization.

4. The best methods of reduction are Jones' and Cotton's.

5. It is best to begin massage and active exercises on the third day.

6. Stiffness of the fingers should be avoided by early use.

7. Some slight deformity may remain, especially widening of the radius.

8. Some permanent shortening of the radius may result from condensation of the tissue of the lower fragment where the upper fragment is impacted into the lower.

9. Shoulder pain is due to the impaction force and should be avoided by early baking, massage and use of the shoulder and hand.

10. A roentgenogram should be taken before and immediately after reduction, and at short intervals during the course of treatment. The patient should not be discharged without a final roentgenray examination.

End Results of Fixed Traction in Fractures.—H. W. Carr and J. E. M. Thomson (*Journal of Bone and Joint Surgery,* July, 1925) advocate from their results that leg fractures be treated by having the traction imbedded into the cast. After treating in all one hundred cases of fracture with fixed traction without a single non union, with less than one inch of shortening in any case, and in most cases good anatomic as well as functional results, we feel convinced that this method has proved to be superior to any other. There are those who still maintain that a certain amount of motion between fracture fragments is desirable and that the formation of callus and the healing of fractures is promoted thereby. It is our opinion that this is bad teaching, for the reason that in the best methods of splinting we now know, and especially as usually employed, undue mobility of the parts is the common cause of failure to get good results.

Joint stiffness from disuse after the fracture has healed can readily be overcome by physiotherapy. In those cases where the fracture is in or near a joint, return of function is much greater if the parts are protected from irritation and further trauma than when ineffective fixation is employed or too early movement is tried. The pathological changes that take place in an injured joint with a traumatic inflmmation are similar to those of any other acute infectious arthritis and they respond similarly to absolute rest. By this procedure healing of the diseased surface is hastened and joint damage is minimized. If there is constant movement of such joints, productive or destructive changes occur which are irreparable.

What is to be remembered is that full length and correct line having been obtained, both the length and the position are to be maintained by the cast and the fixed traction.

After the first few days the traction may be said to cease functioning as traction and to serve from that time on simply as a factor in immobilization. This is true for the reason that there is a minimum of motion of the fracture fragments. There is little or no muscle spasm, and the plaster cast and the moleskin adhesive straps prove to be what splints so commonly are not—a true fixed dressing—with immobilization in correct position an accomplished fact.

GYNECOLOGY

Improvements in the Operative Treatment of Uterine Retrodisplacement.—H. S. Crossen (*American Journal of Obstetrics and Gynecology,* September, 1925) states that a considerable proportion of patients with retrodisplacement—particularly before childbearing and after the menopause—have no pelvic symptoms and need no treatment for the displacement. Further, in some of the patients who do have pelvic symptoms, these symptoms are due to some entirely separate lesion, which alone requires correction. Of the patients having disability due definitely to the retrodisplacement, some may be relieved completely by nonoperative treatment. In the cases actually requiring operation, Alexander's operation has proved a failure because it does not correct associated conditions to which the discomforts and disability are mainly due. Most patients have complications requiring intraperitoneal treatment. In cases with adnexa intact and the tissues freely movable, the author deems the following methods effective in the order named: Transplantation of the round ligaments into the abdominal wall by a modified Gilliam technique; posterior implantation of the round ligaments (Webster-Baldy operation); intraperitoneal folding of the round ligaments. In cases in which the tube and ovary of one side have been removed, the best procedure is to fold the round ligament back over the pedicle on the affected side and to shorten the opposite round ligament by reefing, folding over the uterus or drawing backward through the broad ligament. In cases with marked relaxation of the uterosacral tissues and prolapse of the cervix the author, in addition to shortening the round ligaments, resorts to Young's procedure of shortening the uterosacral tissues by sutures sufficiently to lift the cervix into the posterior half of the pelvis. In cases with the pelvic tissues infiltrated and stiffened, the method to be chosen for forward fastening of the corpus uteri depends on the extent of fixation of the tissues. Where the tissues are still sufficiently movable, a short loop of each round ligament may be brought into the abdominal wall and securely fastened there. Round ligament suturing over the top of the uterus gives a forward fastening which is fairly good. Where the broad ligament tissues are so infiltrated that the fundus cannot be brought well forward, partial replacement is best secured by suturing the infiltrated round ligaments and adjacent portions of the broad ligaments to the abdominal wall.

Pelvic Lesions as a Factor in Chronic Cystic Mastitis.—C. Jeff Miller (*American Journal of Obstetrics and Gynecology,* September, 1925) asserts that not only is pelvic disease very often the cause of chronic cystic mastitis, particularly in young women, but also very frequently the condition will disappear without local treatment if the pelvic disorder be identified and corrected. He now declines to pass upon the character of any breast lesion in a young woman without first reviewing her menstrual history and

making a thorough pelvic examination when indicated. Some fifty per cent. of patients with benign breast lesions show also fibroid growth, definite adnexal pathological states, or irregularities of menstruation, particularly those associated with the stigmata of developmental errors. As typical illustrations of the practical bearing of this relationship, the author refers to his recent reexamination of four patients subjected to myomectomy two or more years ago in whom fibroids or chronic hyperplasias of the uterus associated with the pelvic growth; these conditions had uniformly disappeared in a few months after operation. Fifteen cases of fibroids or chronic hyperplasias of the uterus associated with excessive menstruation were all completely relieved of annoying breast symptoms upon treatment with radium. In numerous instances the correction of displacements, the cure of adnexal disease, the relief of menstrual irregularities and even the repair of lacerations have resulted in a striking cure of the breast condition, often without even the removal of the affected area. Nevertheless, definite, circumscribed masses or single, isolated cysts in the breast of young women should be removed. Pain is an almost constant accompaniment in the benign breast conditions; where pain is a symptom of cancer the process is ordinarily so far advanced that the clinical manifestations are easy to recognize. Benign growths vary in size and consistency.

Uterine Prolapse and Rectocele.—J. Homans (*Annals of Surgery,* September, 1925, advocates treatment of this complication by closure of the pouch of Douglas, on the following grounds. Closure of the pouch may be a difficult but not of itself a dangerous procedure. It not only closes with some effectiveness the neck of the hernial sac but leaves the uterus interposed across the superior strait of the pelvis, the fundus anterior and the cervix posterior, in such a position that pressure from above is transmitted forward toward the pubis and no longer tends to push the cervix down into the axis of the vagina.

And though the procedure, as here reported, has been used without the aid of very carefully determined indications, it may apparently be relied upon, in association with a thorough vaginal repair, to cure a rather high percentage of prolapse and procidentia, and is useful especially when the posterior rather than the anterior vaginal wall is chiefly relaxed; when the uterus is of fair or good size and when the abdominal walls is so relaxed as to offer a poor support for any form of fixation.

Conical Resection of the Uterus.—J. N. Jackson (*Surgery, Gynecology and Obstetrics,* September, 1925), offers the following operative technic:

The abdomen is opened by the usual midline suprapubic incision. If there is no other intraabdominal complication a fairly short incision is sufficient. The fundus is grasped with a double volsellum and drawn up. In cases in which this operation is particularly indicated the uterus presents well above the abdominal wall. The peritoneum is closed around the uterus, the cervix being caught just above the bladder reflection in front and likewise low down on the cervix behind. The suture is carried on to complete closure of the entire peritoneal incision. The peritoneal cavity is thus opened only momentarily, and the remaining work is completed extraperitoneally. The tubes and ovaries are just below the peritoneal suture. Each cornu of uterus is grasped with other volsella to hold the organ taut. A conical resection of the body of the uterus is made well down to the cervix in front and behind, the cutting being done entirely outside the mucosa until the canal is divided at the lowest level. In making this excision the cut is bevelled. The bleeding is remarkably slight. A few vessels on the cut surface may require ligation. A suture ligature which does not slip is best. A few mattress sutures may be used across the bottom of the bevelled flaps to control bleeding further and to approximate the lower portion of the groove. The anterior and posterior edges of the uterine flaps are sutured together from cornu to cornu, usually with an interlocking suture to further suppress oozing. We now have two finger-like round ligaments on each side with the cervical canal entirely closed over. Before this suturing the mucosal canal is sterilized either with carbolic acid or better with the actual cautery tip. An undermining incision just above the rectus fascia is made on either side and a puncture is made through fascia and muscle about one inch outside the median incision. This puncture is made large enough to permit delivery of the tonguelike flaps without strangulation. The delivery of the flaps is usually made with a small double tenaculum passed from without inward, the tip of the ligament being grasped and pulled through to the top, as in a round ligament operation. The remainder of the original abdominal incision is closed in the usual manner, the two uterine flaps being brought over and sutured together in the midline and to the rectus fascia. The uterus is thus held up firmly as by ice tongs and cannot get loose. The skin incision is closed with a small drainage of rubber dam to provide for possible oozing.

This operation brings the cervix up to the level of the abdominal wall and effectively takes out the pelvic slack. It is well to remember that the flaps above the fascia will present a small continuous mass which might be mistaken for a hernia by a patient inclined to be uneasy. This can be prevented by proper explanation. The uterine and ovarian vessels are not ligated and the ovaries are left with a normal circulation. The patient is sterilized. Occasionally for short periods of time there may be a slight menstrual flow of blood from the mucosa of the cervical canal unless this is destroyed by cautery. This possibility should likewise be explained.

Ovarian Dermoids.—J. D. Koucky (*Annals of Surgery,* April, 1925) finds from his series of cases that patients with ovarian dermoids usually come to the surgeon during the fourth and fifth decades of life. Unilateral dermoids do not markedly interfere with childbearing; if the dermoids are bilateral, this function is definitely reduced. The symptoms of ovarian dermoid are due chiefly to pressure on surrounding organs, and to complications. The menstrual flow, in spite of the marked distortion and destruction of the ovaries, is increased rather than diminished. Röntgenological examination, made in a small number of cases, revealed pelvic shadows in half of them.

Congenital Absence of Uterus.—L. R. Wharton (*Surgery, Gynecology and Obstetrics,* January, 1925) advises that in making a clinical study of a case of congenital abnormality of the uterus, one must bear in mind that the genito-urinary organs have a common origin, and in their development are inseparably associated. Such malformations must therefore, be studied from the viewpoint of the genito-urinary system as a whole. Malformations of the uterus are occasionally associated with developmental defects of organs not in the genitourinary system; such defects have been found most commonly in the abdominal wall, the bony pelvis and the structures derived from the cloaca, *i. e.*, the rectum anus and bladder. A satisfactory explanation of these associations has not yet been made. The experimental work of Hertwig and Stockard demonstrates that congenital defects have their incipiency farther back in embyronic life than we have heretofore supposed.

PEDIATRICS

Malnutrition in Infants with Cleft Palate.—J. A. Foote (*American Journal of Diseases of Children,* September 1925) states that infants with cleft palate are frequently below normal nutritional standards during the first year of life. This condition of malnutrition is accompanied, if not caused, by a diminished fluid intake as compared with the normal infant of the same age. Diminished negative pressure in the mouth during the act of sucking, caused by the entrance of air from the nasal cavity through the palate cleft, causes infants with cleft palate to work at a mechanical disadvantage. An obturator closing off the nostrils increases the negative pressure within the mouth in certain selected cases, and enables the infant to suck to greater advantage and to take a larger quantity of food in a given time. To accomplish this the author used a simple strip of dental rubber dam about two inches wide and four inches long, to which was attached tapes at each side, and the tapes tied so that the rubber was stretched with sufficient tightness to block off the nostrils, the lower end of the rubber dam lying over the lip and the nipple. This effectually excludes the air. Air for respiration is given by gently lifting the upper edge over the nose, between sucking contractions.

Blanching Test in Scarlet Fever: Use of a Specific Streptococcus Antiserum.—Samuel J. Levin and John J. Parsons (*American Journal of Diseases of Children,* August 1925) carried out some experiments with the Schultz-Charlton blanching test in scarlet fever, using the globulin portion of horse serum prepared by a commercial antitoxin manufacturer for experimental purposes. This serum was prepared by injecting horses intravenously with the whole cultures of hemolytic streptococci obtained from scarlet fever

cases and subcutaneously with filtrate (toxin) of these organisms. The test was carried out by injecting one c. c. of the globulin solution intradermally in fifteen patients who were frankly ill with scarlet fever and showing a well marked eruption, usually within the first forty-eight hours of the eruption. In all cases, including three done at seventy-two hours and one at ninety-six hours, blanching was secured by the antiserum.

The blanched areas were from five to ten cm. in diameter, slightly irregular in shape and usually presented many radiating lines of blanching, extending to the surrounding rash for five to eight cm. The areas of blanching appeared in from four to six hours. In seven cases a two zone reaction appeared. This consisted of a reddened area in the centre of the blanched area, varying in size from 0.5 to 5 cm., which appeared earlier than the blanched area and usually disappeared before the rash faded.

The results of this small series would seem to indicate that the specific antiserum used possesses definite antibodies for scarlet fever. Enough data on the therapeutic use of this antiserum have not been collected to warrant a report on this aspect. On account of the greater difficulty in obtaining normal or convalescent serum for the blanching test, it appears that a specific antiserum would fill a practical need in the diagnosis of scarlet fever. In the fifteen cases in which it was tried, the antiserum mentioned above was effective in producing the blanching phenomenon. This antiserum was not effective in blanching the eruption of two cases of erysipelas and of two cases of scarlatiniform eruption on an anaphylactic basis. In three cases the authors were unable to blanch the rash of scarlet fever by using diphtheria antitoxin.

Rheumatic Infection in Childhood.—Vincent Coates and R. E. Thomas (*Lancet,* August 15, 1925) studied forty-four cases of rheumatic infection in children and they come to the conclusion that this infection in elementary school children is not a poverty disease, but that it is extremely prevalent among such children. The potency of heredity and low lying locality is emphasized. Subcutaneous nodules were demonstrated in thirty-five out of forty-four cases (79.5 per cent.), and are significant of an active rheumatic focus, as shown by their association with symptoms and their absence in three cases of stationary mechanical carditis formerly rheumatic. Thus their presence not only crystallizes an otherwise nebulous diagnosis, but indicates the necessity of continuation of treatment, particularly in nervous children and in those with unsatisfactory cardiac sounds.

The proliferation of the lining endothelial cells of arterioles and perivascular collections of histiocytes, is such as obtains in response to the virus of rheumatic fever, both in the endocardium and pericardium. It would appear, therefore, not improbable that these nodules are but pocket editions of the large subcutaneous nodes occurring in acute rheumatic fever and are analogous to the submiliary nodules of Aschoff.

In the treatment it has been found that satisfactory results are more easily obtained by the exhibition of small doses of thyroid or iodine in addition to salicylates, alkalies, and arsenic. This treatment was adopted on the presumption that smouldering infections tax the thyroid gland. Test, exclusion from school ,and avoidance of wet were enforced where necessary.

Vaccine Therapy the Method of Choice in the Treatment of Whooping Cough.—After thirteen years' observation and considering the fact that Charles James Bloom (*Archives of Pediatrics,* August, 1925) has followed many plans of treatment and different combinations of vaccines, the therapy advocated for the management of whooping cough is found to be the most efficacious in all respects. As a preventive in less than one per cent. of those vaccinated has whooping cough developed up to this time. And, finally, the death rate of zero may convert those who still doubt the value of the vaccine therapy in whooping cough. The author's series comprise 841 cases with accurate records, at almost two and one half times this number were followed. Of 383 patients immunized, only four cases of whooping cough developed, even though seventy per cent. of these patients were exposed to infection.

The following routine is now followed in the prophylactic cases: 1. The mixed vaccine, each cubic centimetre containing 8,500,000,000 bacteria of which the pertussis bacilli number 5,000,000,000 and the influenza bacillus 3,500,000,000, is used. 2. This vaccine is given within ten days after it has been prepared. This is very important. 3. One cubic centimetre is given on alternate days for three doses, then one c. c. every second day, if the complement fixation test justifies it. 4. In cases of marasmus, congenital lues, bronchial asthma, convalescence, and in infants under one month of age, half the specified amount should be given.

In the curative cases, 1, always use a fresh vaccine—not exceeding one month; within ten days preferred. 2. The initial dose should be a maximum dose, and subsequent doses should be of the same amount providing there is no marked reaction; then a reduction of 0.25 c. c. is made in the succeeding dose. 3. Give injections on alternate days, until one of the more pronounced symptoms (number of coughing spells; intensive coughing spells; cyanosis, vomiting, loss of appetite and restlessness) are on the wane. If cyanosis is marked, associated with or without the loss of consciousness, adrenalin chlorid is added in amounts proportionate to age. 4. Do not limit the number of doses—give as many as are indicated in the individual case. 5. Anaphylaxis was never seen; reactions limited in number with fever seldom exceeding 102° F. lasted but a few hours. The local reaction is trivial. 6. Usually no drugs are given when vaccine therapy is used. Sedatives may be used to facilitate sleep, but in all cases maximum amounts of the various iodids are given when the vaccine is discontinued. The average was four doses for each case treated. The presence of both leucocytosis and lymphocytosis means a diagnosis of pertussis.

Mongolian Imbecility as an Anthropological Problem.—Charles Herman (*Archives of Pediatrics,* August, 1925) states that recessive unit factors may reappear in a descendant, after remaining latent or concealed for many generations. Defective embryos are the least likely to mature. This is probably due to the presence of the socalled lethal factors which cause disintegration of the fertilized ovum. Other congenital anomalies are often present in mongolian imbeciles. Many of these are definitely known to be due to the presence of recessive unit factors. There is probably an infusion of mongolian blood in a certain percentage of Europeans. There are many points of resemblance between mongolian imbeciles and racial mongols. There are also a few differences. There are several points of resemblance between mongolian imbeciles and the anthropoid apes, but there does not appear to be conclusive evidence that they are more closely related to the orang than to the other anthropoids. Both the anthropoid and the mongolian characteristics or unit factors must have been present in the parent trunk from which the human and the anthropoid branches were derived. If we assume that mongolian imbecility represents a reversion to a primitive type, we have an explanation of certain anthropoid and mongolian characteristics.

Bone Marrow Studies in Infants.—Eugen Kramár and Valerie Hensch (*Monatsschrift für Kinderheilkunde,* August, 1925) say that with the proper technic and complete asepsis the puncture of the bone marrow in the living infant is a harmless procedure.

Normally the bone marrow of infants shows a greater number of granulated cells (promyelocytes, myelocytes, juvenile, coarsely and finely granulated cells) than lymphoid elements. The normal bone marrow picture is leukocytic (average sixty-one per cent. leucocytes, twenty-five per cent. lymphocytes). The proportion of the juvenile, coarsely granular and finely granular blood cells is different in the bone marrow than in the blood, the coarsely granular cell predominating. The basophiles are few in number (under one per cent.) in the bone marrow. The number of eosinophiles is generally one to three per cent. Of the lymphoid cells, the lymphocytes predominate. Among one hundred leucocytes, there is an average of five to ten nucleated red blood cells, and these are exceedingly numerous in syphilis (twenty-four to forty-seven per cent.).

In infants suffering from an exudative diathesis, there is usually a pronounced bone marrow eosinophilia (eight to nine per cent.), frequently even in those cases where there is no eosinophilia in the blood. In the slight cases of rachitis a mixed bone marrow picture, but in the severe, uncomplicated cases a pronounced lymphatic bone marrow picture is characteristic (average thirty-four per cent. leucocytes, fifty-four per cent. lymphocytes). Complications may produce changes in the picture. Pertussis also seems to be associated with a bone marrow lymphocytosis. Those diseases that rather produce a leucocytosis in the blood picture, show no striking changes as a result of the normal leucocytic type of the bone marrow.

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Medicolegal Notes.

INSURANCE COMPANY JUDGE OF ADVISABILITY OF ISSUING LIFE POLICY

In an action on a life policy, defended by the insurance company on the ground of material misrepresentations in the application regarding health, the application containing a provision by which the applicant agreed to forfeit right of recovery if any representation in the application should be false if made with intent to deceive, or if it materially affected either the acceptance of the risk or the hazard assumed, the New York Appellate Division held, Denler v. Continental Casualty Co., 209 N. Y. Supp. 629, that it was entirely optional with the company whether or not it accepted the application and issued the policy, and therefore a charge that it could not relieve itself from liability by merely saying it would refuse the risk, but only if it would have been justified in refusing because of the ailment, was error.

HELD THAT MALPRACTICE CASE CANNOT BE BASED ON OPINIONS THAT DIFFERENT TREATMENT SHOULD HAVE BEEN FOLLOWED

In an action against three physicians for malpractice in the treatment of a fractured wrist in which infection had set in, plaintiff's expert witnesses said that large incisions should have been made in the arm when the infection appeared. Defendant's experts considered the draining of the wound, as was done, the proper treatment. All admitted that infection is likely to arise in any case; and that it can come from a condition of the blood as well as from an outside source.

The trial court having directed a verdict in favor of one of the defendants, the case came before the New Jersey Supreme Court on plaintiff's rule to show cause. That court held, Granaldi v. Zeglio, 129 Atl. 475, that the trial court ruled properly in granting defendant's motion for a directed verdict. The court said, in part: "A physician is not a guarantor without express contract of the good effects of his treatment, and he only undertakes to do what can ordinarily be done under similar circumstances.

"The testimony showed that treatment of an infected arm by draining as was done in the present case was a well-recognized and standard form of treatment. The fact that the plaintiff introduced evidence of physicians and surgeons that they would have made incisions in the arm which would have laid it open from the wrist to elbow is not evidence of malpractice. Surgeons of influence frequently differ in their opinions as to the treatment to be used in a given case. To permit a jury to pass upon the question of malpractice because testimony is given by physicians that they would have used a different treatment from the one prescribed or followed would be to make a physician or surgeon a guarantor of the success of his treatment in every case. If he fails to restore his patient, he must face a lawsuit with its accompanying annoyance and expenses. If the plaintiff's position be sound, a jury must pass upon the question whether the treatment given was correct or not. As the plaintiff did not respond to the treatment given and his arm became restored to its condition prior to the fracture, it could be expected that a jury would reach the conclusion that some other treatment of the condition which arose should have been applied. The result would be to return a verdict for the plaintiff, notwithstanding the same infection might have followed the other kind of treatment. If such were the law, there would be few physicians and surgeons who would undertake to treat a case. For every failure to effect a cure would lay the basis for a lawsuit.

"It takes more than the opinion of one or more physicians or surgeons that the treatment followed in a given case should have been different to lay a foundation for malpractice. . . . . A case of malpractice cannot be proven by the testimony of a few physicians or surgeons that they would have used some other treatment than the one used, in the absence of testimony from which it may be inferred that the defendant failed to give to the case that skill and care ordinarily possessed and exercised by others in the profession."

ADMISSION OF EXPERT TESTIMONY

In a personal injury action error was assigned because of the admission of expert testimony of a chiropractor on the ground that though he was not a licensed physician he was permitted to testify as an expert and to give the result of his examination of the plaintiff, and also to testify "as a layman" and to give in opinion evidence involving his physical condition. The witness had testified that he found in the plaintiff subluxation of the atlas; that this vertebra (subluxated) pressed upon the nerves which lead to the brain, the face and the skull. He was not asked whether in his opinion the condition he found might or could have been caused by a fall. The Missouri Supreme Court held, Meyers v. Wells, 273 S. W. 110, that a person who has made a special study of the human spine, followed by several years of experience in attempting to adjust "subluxation" of vertebræ, has shown such special knowledge of that subject as qualifies him to testify as to the condition or relative position of a vertebra found upon a direct physical examination. In that particular he has acquired, by technical training and practical experience, special knowledge not shared by men in general.

The testimony of a nerve specialist that a concussion of the brain, caused by a fall, so as to render the patient unconscious for 10 or 12 days could have caused a condition of the plaintiff which he testified he found on a physical examination, was held admissible.

DEATH FROM EXPOSURE IN REFRIGERATOR HELD COMPENSABLE

The New York Appellate Division holds, Lerner v. Rump Bros., 212 App. Div. 747, 209 N. Y. Supp. 698, that the unaccustomed exposure of an outside salesman for ten minutes in a refrigerator when called upon to show a customer some merchandise, resulting in a severe cold, which, according to medical proofs, culminated in his disability and death, was compensable as an accidental injury in the course of his employment, within the Workmen's Compensation Act.

HUSBAND ENTITLED TO RECOVER MEDICAL EXPENSES FOR INJURED WIFE

The New Jersey Supreme Court holds, Lanning v. Trenton etc., Traction Corp., 130 Atl. 444, that a verdict for a wife suing for personal injuries sustained by her, and a verdict of no cause of action as to her husband's claim for the expenses incurred by him in the treatment of her injuries, and compensation for the loss of her services and society, were irreconcilable. The rendition of the medical services was not disputed, nor was the propriety of the charges made for such services challenged. If the traction company was responsible for injuries to the wife, it was held to follow that the husband was entitled to recover such moneys as he had expended in the treatment of her injuries, and also a reasonable compensation for the loss of her services and society.

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The Future of Biological Investigation*

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In choosing a topic for these brief remarks it seemed to me most appropriate to select one which would permit me to touch lightly certain aspects of the educational problem which concerns us all. I wonder what your views are regarding the value of education. Perhaps in common with many you think most of its utilitarian values. I think the average person regards an education as a training which will fit him the better to perform his daily tasks and enable him the more easily to outstrip his fellows in the struggle for material success. It is true that education will do this, but is this all? What after all is this material success for which so many people give their best efforts? To the lower animals and, I fear, to many men material success means meeting the needs of the body for food and shelter for today so that its existence may be continued until tomorrow and so on in endless repetition until at last the law of the sequence is broken and the individual's struggle for continued existence is at an end. Rightly regarded, the main purpose of an education is not grossly utilitarian. The capacity to derive more than mere animal comfort from material success depends upon the development of those powers which it is the function of education to cultivate. From this viewpoint all education is good, all knowledge is a source of joy to its possessor, but for the cultivation of a serene outlook on life and its vicissitudes, for the maintenance of a sound balance and correct perspective the discipline of medicine seems fortunate.

During the early years of childhood our every need is anticipated and we receive constant care. Later we must learn to depend on our own efforts and so gradually this parental care must be relaxed so that we may learn self dependence. So in our education at first we are merely given facts to learn. How anyone came to know them as facts need not for the present trouble us. Eventually we must depart from this method, for in time we shall reach a stage when the answers to our questions are not to be found in books nor obtained from men, but must be obtained direct from Nature. Some of you, I hope most of you, have already begun to reach the stage of intellectual independence, but it has been our observation in the past that the medical student craves definite statements of fact such as he becomes accustomed to in his more elementary studies. In some branches of the work this craving can be gratified to a limited extent, but in the greater number of cases definite dogmatic statements would be as likely to mislead as not. The medical sciences are growing. Methods of investigation improve. Things which were regarded as facts of observation a few years ago are shown by more accurate measurements not to be so. Theories particularly are subject to change in the light of new knowledge. You will not infrequently find several theories presented to account for some biological process. The evidence for and against these will be given and the decision left to you. You may find the decision hard to make and wish your instructor would make it for you. This he must not do, for in the future as knowledge advances you must be prepared to make your own decisions, and this you can learn to do only by beginning. The work of the physician and surgeon calls for ability to assume individual responsibility and make quick decisions in matters of great moment. You must begin doing this in your training period. If all of the fundamental medical sciences were fully understood, if disease always manifested itself in a constant and definite way, if there were for each ailment a definite curative treatment or surgical procedure, the teaching would be easier, but I doubt whether the subject would make the same appeal it now does to the man of intellectual courage.

There was a time when men believed that all life processes were so essentially mysterious, so inextricably bound up with the "vital" forces supposed to be different from those obtaining in the world of nonliving things that any attempt to understand the mode of operation of the living organism must be doomed to disappointment from the beginning. The success which attended Harvey's investigations on the circulation of the blood is a brilliant example of the fruitfulness of common sense and correct mechanical ideas applied to a biological problem. I presume that Harvey's teleological reasonings would provoke a smile nowadays, but that is largely a habit of thought and manner of expression. The point to be emphasized is that instead of allowing himself to be awed into inaction by the great mystery of life he proposed attempting to apply to one of the mysteries the mechanical principles which hold in nonliving mechanisms—and he found that the plan worked.

*Address delivered at the opening exercises of the College of Physicians and Surgeons, Columbia University, on September 23, 1925.

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In the early days of chemical inquiry those substances which were derived from the life processes of plants and animals were called "organic" chemicals and it was believed that they could be produced only by the activities of plant or animal organs. To this day we preserve a memorial of that stage of thought in that we denominate a large branch of chemistry "organic chemistry." When, less than a century ago, Woehler succeeded in preparing from inorganic chemicals urea, a substance hitherto known only as a product of animal metabolism, it was realized that there is no necessary reason to assume other than the usual laws of chemistry to account for the production of certain at least of the chemical substances associated with life processes. To enumerate all of the substances which are the natural product of plant or animal life that have now been synthesized by the chemist from nonliving materials would be no inconsiderable task.

Johannes Mueller, leading physiologist of the early part of the last century and teacher of DuBois-Reymond and Helmholtz, held the view that it would be impossible to measure the rate of transmission of the nervous impulse. He believed the processes of thought showed that transmission must be instantaneous. A few years later his own pupil, Helmholtz, measured the rate with simple contrivances and showed that in the sciatic nerve of the frog it is not only finite, but of the same order of magnitude as the speed of a not very fast railroad train.

With the discovery of oxygen and its relation to combustion it was not long before the suspicion was aroused that oxidation might have something to do with animal heat. The expired air was found to be richer in carbon dioxide and poorer in oxygen than the inspired. Men had become familiar with the steam engine as a means of converting the chemical energy of coal into mechanical work. Could it be the oxidation of foodstuffs or of body substances elaborated from the foodstuffs which furnished animal heat and caused muscular movements? I have not time to go into the history of this matter and shall pass over the fundamental researches of Voit and Pettenkofer to mention briefly the culmination of these investigations in the work of Atwater and Rosa with the respiration calorimeter. These investigators proved beyond peradventure that the law of conservation of energy extends to the animal body. They showed that the burning of a gram of foodstuff outside the body yields precisely the same amount of energy as its slow oxidation within the body.

One might continue multiplying instances of this kind, but those mentioned are sufficient in number, variety and importance to illustrate the point I wish to bring out. While it has not been proven that there are no special "vital" forces the greatest progress in understanding the activities of living things has invariably resulted from attempts to extend to the living organism those physical and chemical conceptions which have been found true in the nonliving world. The assumption of a mysterious "vital" agency not subject to investigation by the methods of physics and chemistry tends from the beginning to deaden thought and kill initiative. I have no quarrel with the man who feels that such human qualities as the sense of honor, of altruism, of patriotism are too refined to admit of explanation as conditioned reflexes. It is not necessary for our purpose to assume at the outset that *all* life processes are of a mechanistic nature controlled by the same laws as those which obtain in nonliving matter. Such an assumption in the present state of our knowledge would be quite as difficult to defend as the vitalistic hypothesis. All that seems requisite to put the mind in the proper attitude for investigation is to determine that we shall endeavor to ascertain how far we may explain and account for the phenomena of life in terms of the laws which have been found to apply to physical and chemical processes in the inanimate world.

In presuming to choose for the title of my address The Future of Investigation in Biology I had not the temerity to think of trying to predict what the future will or will not bring in the way of particular results or even how, precisely, the result of increasing our biological knowedge is to be obtained. It is rather my purpose to indicate in a general way what seems to be requisite in order that some such fundamental advance may be made in biology as was that which Newton made in mechanics when he was able to prove the validity of his extension of the law of falling bodies on the earth to bodies throughout all space as far as data are available. I presume everyone has heard the story of Newton and the apple which fell on his head. It is hardly necessary to say that it is apocryphal. The true history is less well known and as the essentials can be given in a few words and bear upon what follows I may be pardoned for a slight digression. It occurred to Newton that perhaps the attractive force which causes bodies near the earth to gravitate toward it might extend into space indefinitely and if so even as far as the moon, perhaps accounting for her retention in her orbit. He immediately made a calculation to determine how far a body would fall in a minute at the distance of the moon if its fall were due to the same force which attracts bodies at the earth's surface. He found that the distance per minute would be something over fifteen feet, whereas the actual deflection of the moon from the direction of the tangent to her orbit was about thirteen feet per minute. I fear many of us would have regarded that as a rather close approximation, but Newton found it so unsatisfactory that he at once abandoned the theory. Thirteen years later he was again led to consider this theory and became aware of a better determination of the value of the earth's mean radius which had been made since his first calculation. The value he had used in 1666 had led to a wrong estimate of the moon's distance. With the new value he obtained a correspondence between theory and measurement which proved satisfactory to him. So satisfactory has it since proved that with ever increasing accuracy of observation and with data available not alone from our own solar system but from distant double stars, Newton's generalization is found to fit the facts. Only within recent years and in the fields of light and electricity have facts been observed which seem to require some slight modification of the Newtonian mechanical conceptions. Biology today is in something like the state in which mechanics and astronomy were in the days of Hipparchus or Ptolemy. We are living in the age of the epicycles. Our greatest need is for some generalization which will reduce to order the tremendous chaos of observations we now have before us. The

material from which the generalization must come is the body of observed facts. To be able to generalize from these facts, however, it is necessary that someone shall be familiar with all the different types of observational data which may reveal something essential to the generalization. It will also be essential that we have a fair general knowledge of the basic principles of chemistry and physics and some facility in applied mathematics. At first sight this would seem to require an incredible amount of preparation. Probably it would in the present state of biological science. No great advance is ever made by the unaided effort of one man. Many contributed their share before Newton was able to take the step he did. Many have contributed already to biology, but the kind of contribution we need now is a summarizing of the data. We are all of us at present too close to the great mass of detailed observation to see its broader implications. We need not waste time regretting this. The work which has been done had to be done, or at least much of it had to be done and possibly much more of the same type of work will still have to be done before biology is ready for a simplifying generalization. The broader view which is denied to us will be the heritage of our successors. They cannot, must not spend their time delving into the great mass of details. Gradually, through the efforts of many workers the more essential phenomena will be separated from the incidental so that it will be possible for one individual to survey the field without devoting so much of his lifetime to the task as to leave no opportunity for that familiarity with the related sciences which is requisite before a generalization can be made. Meanwhile we should do our best to secure *reliable* data so that the "Newton of biology," to use Cuvier's expression, may not be baffled in his work as Newton was by attempting to use inaccurate information. I believe that one of the most urgent needs in biological work today is a study of this very matter of the reliability of conclusions drawn from biological experimentation.

In so far as biological phenomena rest on a physical or chemical basis, we may hope for assistance from the advances made in these sister sciences. We do not know what day an important discovery or generalization in chemistry or physics may permit the coordination and understanding of many seemingly unrelated biological phenomena. If we could learn to express our biological facts without the use of quite so much special terminology, it is even conceivable that men in other fields of science might contribute to its theoretical handling. I think we might well give attention to this matter of unnecessary technical terminology.

We may perhaps draw a lesson from one of the features which has characterized the development of chemistry in recent years. Although scientific chemistry dates from the introduction of quantitative methods, the application of mathematical analysis with a view to pushing chemical knowledge beyond the bounds of observation is comparatively recent. Thirty years ago chemistry might have been described as a nonmathematical science. To the man who has not at least an elementary knowledge of mathematical analysis modern chemistry is a closed book. In fact the application of mathematical methods promises to do as much for chemistry as it has done for physics. In most branches of biological work it is difficult at present to secure quantitative accuracy comparable with that attained by the pure chemist or physicist. Gradually as our methods improve it should be possible to investigate our results under the microscope of mathematical analysis. When this can be done we may begin to hope for the long awaited generalization which is to bring order out of chaos, reduce the size of our volumes and give us time for a broader outlook.

What should be the preparation of the biologist of the future? I can attempt to answer this question only in general terms. Medicine, in its practical aspects, is applied biology, and the preparation for its study will depend on the character of the biology of the time. It must of necessity be along rather definitely prescribed lines. For the student of pure biology or for the medical student who determines for the first time that he is to devote his life to investigation and teaching rather than to practice more latitude might be allowed. It seems to me most desirable that there should come into the biological sciences men of widely different training. There should be some who are trained as chemists, others trained as physicists with the usual mathematical equipment of the physicist. Still others should probably have much the type of training which most of our present day biologists have had, with perhaps somewhat more emphasis on precise quantitative methods.

The Causal Parasites of Cancer

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London

Over a third of a century ago a view then new was taken of certain alien bodies that are easy to see with the ordinary microscope in many common typical human cancers. One group of these bodies had been called "cells of endogenous origin" in 1851, others had been looked on as degeneration products. In the new view one or both sets of these bodies were believed to be parasites; some observers thought them to be fungi, others sporozoa.

In 1892 it was affirmed that these alien bodies of cancer were of the same nature as the bodies called "psorosperms" in cystic ureteritis, and that in many human cancers and sarcomas their optical characters distinguished them from the tissue cells, and showed that they had a regular life cycle, which together with the distribution of the parasites in the several tumors left no doubt that they were the cause of the disease. (1)

During the past year it has been announced that filter passing parasites had been obtained from sarcomas of a fowl and of a mouse and from a human breast cancer; that these parasites had been grown in artificial cultures, and photographed on the dark ground and by ultraviolet rays, an elaborately constructed special microscope being required for this purpose. The parasites from all three sources resembled in form the protist which causes pleuropneumonia of cattle, and which was photographed in 1910, both in stained preparations and on the dark ground, the name Asterococcus mycoides being then given to this protist (2).

Can the relatively gigantic "cancer bodies" of 1890 be related to the filter passing cancer protists of 1925?

The answer to this question has very wide bearings on our comprehension of the full structural and functional potential of primitive forms of life; and the essence of this information is given by a simple experiment with the specific alien bodies of molluscum contagiosum.

Molluscum corpuscles when mature are the dense, more or less oval, bodies which are so strictly specific that diagnosis is made sure by their presence. Under a low power of the microscope they are easily manipulated with needles on a slide. The experiment consists in placing a ripe lesion, incised vertically, in a few drops of water in a watch glass in the way that I have described (3). On and after the fourth day active vital changes are always to be seen in some of the corpuscles. Taken together these active changes prove that the entire corpuscle is a protist entity, potentially equivalent to a sporange of a phycomycete.

The first changes that are visible are due to inception of water and are comparable to those seen in a sclerotic slime mould after it has been moistened with water: the dense half opaque substance of the corpuscles becomes clear and then lively and continuous circulation begins. This change usually begins in the middle of the corpuscles, then usually extends until it involves the whole corpuscle except an outer capsule and an internal framework when these structures are differentiated.

A section through the middle of a ripe lesion shows that the parasites constitute one third of the mass, and this fact considered with their distribution at different stages of evolution of the lesion leaves no doubt that the latter is caused by this parasite, which has been named plassomyxa contagiosa. In 1919 it was demonstrated that molluscum lesions ground up with sand and one or two c.c. of salt solution yielded by suction through a Berkefeld filter an infective fluid, which, injected into the skin of two volunteers, caused typical lesions, it exists in the lesion the causal parasite of molluscum is capable of being broken up into filterable fragments, some or all of which are viable; a fact which will not surprise anyone who has watched one of these parasites in a water culture when its protoplasm has begun to circulate and looks almost as clear and as fluid as water.

Many human cancers and sarcomas examined in fresh teasings in their own juice show abundant protist forms like some of the stages of the molluscum parasite as seen in water culture. This correspondence is also seen on comparing sections of cancers with water cultures of molluscum fixed when in full vital activity.

The alien bodies of cancer pass through endogenous stages which are homologous with exogenous (water culture) stages of plassomyxa contagiosa; or, in other words, the parasite of cancer probably belongs to the same genus as that of molluscum.

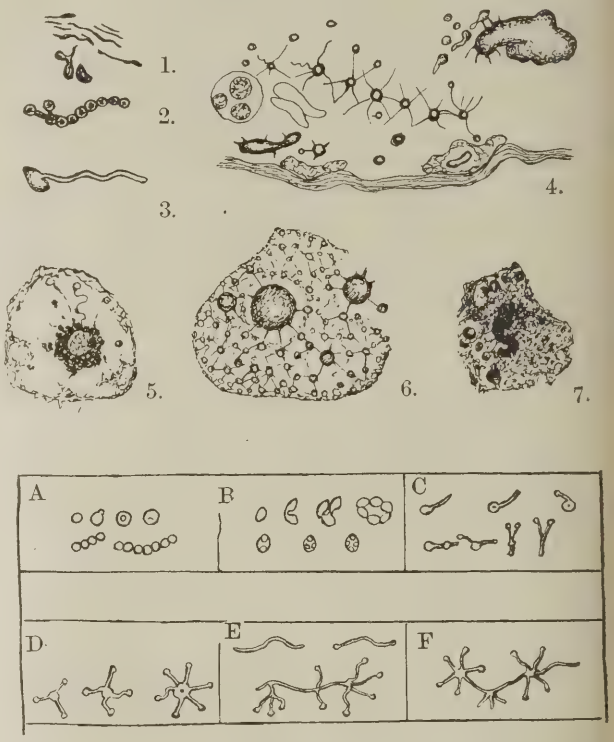

Fig 1.—1, 2 and 3 are from a choriocarcinoma, 4 to 7 from a mammary sarcoma. × 800 diameters, except 6 which is × 1600 diameters. 1, linear and irregular forms; 2, streptococcoid; 3, linear from oval; 4, parasites in a venule, above an irregular mass from which coccoid forms are separating, and below, linked asters; 5, a parasite inside the nucleus of a connective tissue cell, it is of asterococcoid type with a central vacuole, and is of a dense retiform composition, from a photograph; 6, parasite that has been like 5, but has migrated from nucleus into host cytoplasm and has withdrawn tentacles and imbibed water; its composition of smaller asters is plainly seen; 7, parasite from an intercellular space; from being like 5, a sort of molecular fusion has occurred with formation of a dense central nucleus from which by local refusion with portions of cytoplasm new asterococcoid amebulæ are in process of formation near the periphery; from a photograph.

A to F are different forms assumed by the causal parasite of pleuropneumonia of cattle, Asterococcus myeoides; × 5,000 diameters, after Borrel and others, 1910. A and B, coccoid forms; C, linear extensions from coccoid forms, also two forked forms; A, asters; B, linear and linear × asters; F, linked asters.

Proof of the existence of a filterable stage of the latter rendered it probable that a corresponding stage of the cancer parasite would be obtained by using a similar technic.

The finding and cultivating of a filterable protist obtained from sarcomas and from a human cancer in 1925 is complementary to the demonstration of protists in cancers and sarcomas in 1892 (4). In the adjacent figure are placed together a few parasitic elements as seen in a human choriocarcinoma and in a human mammary sarcoma with others copied in outline from a figure of a dark ground preparation of Asterococcus mycoides.

In human malignant disease many other structural varieties of the parasites occur; also in cultures four or five days old the asterococci fuse into masses some of which resemble mycelia.

NOTES

1. References to the accounts of L. Pfeiffer, Russell, Wickham, and others are given in the present writer's *Cancer, Sarcoma, and Other Morbid Growths Considered in Relation to the Sporozoa,* 1893; in the same book an account of the endogenous cycle of the cancer parasite is described, and it is shown how the cancerous process results from interaction of the host tissue and this cycle.

In 1906 in *Protozoa and Disease, Part II,* the parasitic causation of cancer is further illustrated as seen in an alveolar sarcoma of the breast, in a sarcoma of the testis, and in the infective granuloma of dogs. The share of phagocytosis in cancer and an account of a choriocarcinoma, and the part played by chromidia in the life of a mycetozoan are dealt with in *Protozoa and Disease,* Part IV, 1915; lastly, in *Protists and Disease,* 1922, details of the making of water cultures of molluscum corpuscles are given; and, based on broad comparison with mycetozoa and synchytrians the conclusion is stated that the causal parasites of molluscum and of cancer are nearly related to the genus Synchytrium, and hence are phycomycetes, not sporozoa.

2. The morphology of the causal microbe of pleuropneumonia of cattle is described in the *Annals of the Pasteur Institute,* 1910. Bordet in one paper, and Borrel, Dujardin-Beaumetz, Jeantet, and Jouan in another.

Other papers on the filterable virus of cancer by Gye and Barnard were published in *The Lancet* of July 18, 1925.

Besides forms such as are suggested in the illustration accompanying this paper Bordet and his colleagues found in cultures five or six days old that the parasites of pleuropneumonia sometimes coalesced forming myceliumlike masses, these they called involution forms. They resemble structures described by James Young in nutrient aerobic cultures of cancer and called by him sclerotia. (See *Edinburgh Med. Journ.,* July, 1924.)

3. The first suggestion that water cultures of molluscum afford a solution of many of the present problems in biopathology was made in the *Centralblatt f. Bakteriol.,* I. Feb. 28. A broad comparative study of molluscum, cancer, and other diseases, together with a practical study of protists such as slime moulds, synchytrians and kindred organisms is what I now recommend as being necessary to a right understanding of cancer.

4. The term microhenad is suggested (*Protists and Disease,* p. 108) for the filterable stage of a protist, a microhenad being a special sort of chromidioblast. When it lives in the epidermis the parasite of molluscum exists as aggregates of chromidial granules, such aggregates being capable of becoming encapsuled sporanges, or equivalent forms. Because a protist remains in a microhenad state when growing anaerobically in artificial culture some wrongly assume that it can have no other mode of existence; we may compare what happens when a mucor is grown anaerobically in the presence of glucose: it loses its ordinary stately habit and assumes its 'gemma' form, in which it grows like a yeast.

Plastic Surgery of the Nose*

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Plastic surgery is that surgery which aims to reconstruct or restore, as differentiated from surgery which primarily removes pathology. Both are necessary, are equally important and may be combined in one operation. Plastic surgery repairs defects and malformations, either congenital or acquired. It restores function and improves appearance. Plastic surgery has always in mind the ultimate cosmetic effect.

Plastic surgery does not involve new surgical principles but it demands the carrying out of these principles in great detail and with certain modifications of technic, to the end that newly imparted or improved beauty be not effaced by scar or other defect.

A patient having a collection of pus about the face applies for treatment. The indications are to drain freely. The surgeon makes an incision in the most prominent dependent portion. But having in mind the cosmetic effect the incision is placed so that the resulting scar will be as inconspicuous as possible. The patient appreciates the difference.

Is a surgeon justified in removing a defect and improving the appearance of a patient when the lesion is not causing pain or jeopardizing life? Decidedly, yes. Let me cite a few examples.

A young woman whose upper and lower lips were greatly everted and which protruded markedly applied for treatment that her condition might be ameliorated. In spite of her light skin she frequently was called upon to deny African descent. The excess of tissue having been excised without leaving a visible scar she was much pleased with her improved appearance. She was not vain but was she not entitled to relief from her condition?

In a fight a man had quite a large section of the helix and lobe of his ear bitten out. Should this wound have been merely sutured or was the surgeon justified in rebuilding the lost portion and effacing the defect?

A man came recently asking for relief from his unsightly appearance. He said he was in an occupation in which he had to meet business men in the spirit of optimism. He declared himself an optimist; he looked a pessimist. He wanted to know if the downward droop of his mouth could be corrected and if the heavy folds of skin of the lower face and neck which interfered with the buttoning of his collar could be removed. He felt sure his success in his work was interfered with by his appearance. Who is there that would say that this man should not be relieved of his disabilities?

A woman asked for help; her sagging double chin quivered when she talked or shook her head. Whether those to whom she talked suppressed a smile when her flabby chin quivered or whether she imagined it is beside the point; her efficiency was much reduced. Since this impediment, together with the wrinkles about her eyes and cheeks have been removed her gait is lighter, her smile is ever present, her appearance is many years more youthful and, best of all, her confidence in herself is very greatly increased. Was the improvement worth the effort?

A young man whose ears, through lack of proper development of the antihelix, stood out from his head applied for correction of the condition. Through incisions in the back of the ears an antihelix was built

*Read before the Portland City and County Medical Society.

into each ear thus folding them back against the head where they belonged. The difference was very striking and the patient appreciated it.

Then there is the problem of tattooing. Should this be removed? I excised a small tattoo from the arm of a woman of fifty-five who had made repeated

Fig. 1.—Condition of lips before excision of excess tissue.

Fig. 2.—Appearance after healing. All scar is inside mouth where it cannot be seen.

efforts for forty years to find some one who could rid her of her blemish. Large areas are removed by tattooing again with tannic acid and then applying silver nitrate. This leaves a soft faintly scarred surface without design or color. When I tell you that one man's wife threatened to leave him if a newly affixed design was not removed you will understand the necessity for the medical profession doing this work.

I have in mind a woman who had not been out of her home for thirteen years because of the destruction of her nose by tuberculosis. Should this unfortunate be denied relief?

Examples could be continued but let these suffice for this time. There are none but will agree that great deformities justify correction. Then, I ask, what constitutes a great deformity? A blemish that seems small to one person will assume large proportions when situated on the body of another. Chamois skinlike patches of xanthoma may be ignored by a few individuals but most would rather be rid of them.

There have appeared recently quite a large number of moving pictures which were either based on, had for their theme, or contained characters having various deformities of the face and bringing out the point that correction of the deformity was of great, often vital importance, not only to the individual but also to his friends and associates. These pictures have all been very well attended and freely commented upon.

There is probably not a national magazine or newspaper of any consequence in the United States that has not had numerous articles dealing with various phases of plastic surgery. These articles have been eagerly read and freely discussed by our lay friends. The public reads these articles with great avidity.

What do these things mean? They mean that the public is interested in the subject of plastic, cosmetic and reconstructional surgery far more than some members of the medical profession are willing to admit.

What will be the consequences if reputable surgeons refuse these sufferers relief and if reputable physicians decry plastic and cosmetic surgery? There can be but one result and that is that charlatans will do the work and this sector of "no man's land" will be occupied by these irregulars.

Do not misunderstand me. I do not favor unnecessary surgery. To be justified surgery must benefit the patient in his or her health or appearance. Every operation asked for need not be done nor should the patient dictate the procedure. The surgeon must use his best judgment to produce the correct result in all plastic surgery, following the wishes of the patient in so far as it may be possible.

A man came in asking that his nose be placed straight on his face, instead of to the left, where he thought it was located. On examination I could find no deformity of his nose either in shape or position. However, I did find a large transverse scar on the upper lip just above the vermillion border from the median line, extending more than half an inch to the left. At the time of the injury he had not had surgical attention and the ridge limiting the lip sulcus had healed considerably to the left of its normal position so that while the ridge on the right came downward in the usual direction, that of the left pointed far to that side, its lower extremity, however, being somewhat to the right of the normal position. Therefore, it can be understood why this young man thought his nose was not in proper position. The columnella was not in the centre of the sulcus. Excision of the scar and restoring the border of the sulcus to its proper position corrected the seeming malposition of the nose.

Among my most grateful patients are many that have been treated by some plastic operation. They are more grateful than patients who have been snatched from an untimely death and they do not hesitate to express their appreciation.

Plastic surgery is not confined to the face but as suggested reaches all parts of the body, wherever

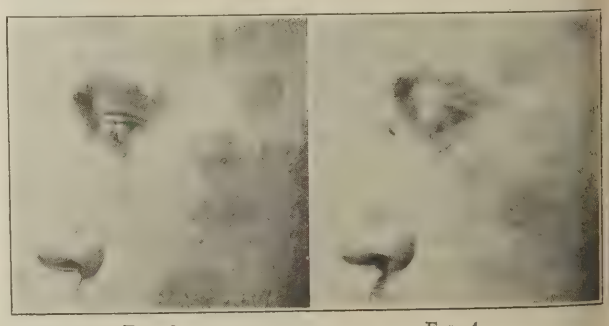

Fig. 3 Fig. 4

Fig. 3.—At age of ten, ten years ago, this patient was struck on the nose with a baseball.

Fig. 4.—Defect filled with celluloid as described.

deformities can be removed, or appearances improved.

A recent press notice detailed that a man had received an injury to his nose which necessitated amputation. I could picture in my mind no trauma which would justify such a radical procedure.

Every particle of tissue should be saved that possibly can be saved. Every little bit should be sutured as near as possible to the place from which it came and every effort should be made to conserve that which is left. By doing these things a later restoration can be done very much more easily and satisfactorily. Often a difficult piece of work might have been made more simple by a little forethought.

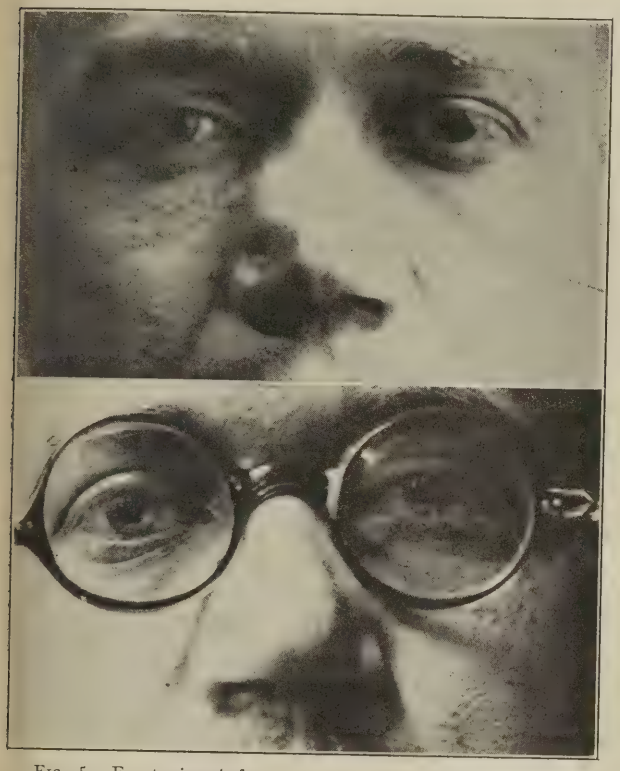

FIG. 5.—Front view before operation, same patient.
FIG. 6.—Improvement in his appearance was very marked. There are no external scars.

What is the proper procedure, when one meets an injury of the nose with loss of tissue, that cannot be repaired at once? Cleanse the wound well adding no additional trauma and preserve all bits of tissue, restore the shape of the nose as regards soft structures, bone and cartilage and maintain the restoration, and prevent shrinking of the loose edges. Thwart the contraction of the edges and their assuming false positions and shapes by suturing skin and mucous membrane together. When skin and mucous membrane are thus united very little, if any, scar tissue is formed, the edges unite without contracting and when the secondary operation is attempted the parts are found to have retained more nearly their normal shapes and positions.

The origin of plastic surgery goes back to the dim past in India and was developed as the result of the fight men and women were making, in those remote times, for the sanctity of their homes. Unfaithful husbands and wives were punished by having the tips of their noses amputated. The culprits soon learned that by reapplying the severed portion, their own or some one else's, it would often reunite restoring the organ. Subsequently members of the tilemaker's caste obtained wonderful results in constructing noses by the use of pedunculated flaps from the cheeks and later from the forehead. From this lowly beginning plastic operations of all parts of the body have developed.

In plastic surgery, as in other surgery, needless to say, asepsis is more important than antisepsis. Sepsis will spoil an otherwise admirable piece of work or produce unnecessarily wide scars. A minimum scar cannot be expected when even slight sepsis is present.

Especially important is it, at all times, to treat the tissues kindly. When the edges are handled with forceps or otherwise crushed wide scars are sure to result. When it is necessary to pull or hold the tissues sharp hooks may be used without injuring them.

Another thing that aids in the production of a small scar and an ideal cosmetic result is to see to it that hemostasis is complete. A small oozing will permit a droplet of blood to separate the wound edges. Use twenty-four drains frequently and especially in all cavities however small.

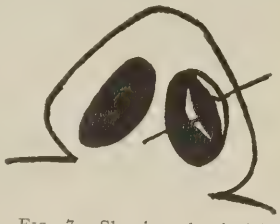

FIG. 7.—Showing the incision inside the nose retracted by silk threads.

Sutures must be accurately placed without tension. Tension that produces blanching will result in a slough, so relieve tension by the use of tension sutures tied over gauze. Tension may also be relieved by undercutting the skin. Do not hesitate to remove a suture that is not properly placed or that produces blanching.

In placing sutures do not approximate the wound edges. Bring the edges of the wound into exact apposition. Replace the thought approximation by the one exact apposition and the improved psychology will result in better technic and very much nicer looking scars. This applies not only to the face but to all parts of the body.

Sutures should be carefully tied so as to just bring the edges together, that is, so the edges just touch.

FIG. 8 FIG. 9

FIG. 8.—A nose deformed by an automobile accident.
FIG. 9.—The appearance after corrective operations.

When tied too tightly tissue must be removed and undue swelling results. When tied too loosely the distance between the edges must be bridged. When tied so that the edges just touch healing takes place

quickly, there is little or no reaction and the scar is very small.

I prefer horsehair for apposition sutures and these are removed early to prevent cross marking on the second, third or fourth day. For tension sutures fine or medium size silk worm tied over gauze is best. When the incisions are properly placed and carefully sutured the wound will leave no scar that can be readily seen. Careful, painstaking work is necessary to produce this result.

I usually apply dressings as follows: When placing sutures leave the ends of sutures at intervals long. When all are in place and tied a very small piece of rolled gauze is tied over the wound by tying the long ends. This dressing is sufficient and does away with bandages, adhesive plaster, collodion, etc., is easily removed, protects the wound and is inconspicuous.

Just a word regarding the removal of sutures. Care must be used so that the wound is not injured when the stitches are removed. It is not necessary to remove all the sutures at one time. Often I remove every other one or perhaps all except every third or fourth stitch. Horsehair is cut very readily without damage to the delicate edges while some of the substitutes require great force to cut.

If after completing a piece of work that is otherwise satisfactory the scar is too large or too prominent remove it later and substitute a smaller one.

I prefer to operate using novocaine (procaine) one to two per cent., with adrenalin hydrochloride solution one to one thousand, five minims to the ounce. Usually a hypodermic of morphine sulphate one sixth to one fourth grain with atropine sulphate one one hundred and fiftieth grain are given one half hour before beginning the operation. The patient remains quiet for several hours after operation and is then permitted to go home. Patients are seen usually every second day and recovery is uneventful.

Before beginning the reformation or rebuilding of a nose it must be definitely fixed in the operator's mind just what it is intended to accomplish, and exactly how the desired object is to be attained. The carrying out of the planned procedures to exactly the right extent gives the perfect result. One must possess a certain amount of imagination to be able to see the completed operation before the work is started. I find it of very great assistance to take photographs and make casts for study before operation as well as for records.

One must never operate while active disease is present. It is better to forego the operation than to attempt it while conditions are not favorable. A man under treatment for syphilis was referred to me for operation. The first time I saw him the anterior portion of the septum was gone and the columna still attached to the lip was free at the anterior extremity. The bridge of the nose was falling in and the deformity was not a pleasant one to look at. I refused to operate until he had had more treatment.

Six weeks later he again requested operation which was again refused. At this time a considerable area of mucous membrane over the alveolar process was denuded exposing a large portion of the superior maxilla which was necrotic and which when extruded must have left a large opening from the nose into the mouth. Wassermann at this time was still positive. Subsequently I was informed that his condition progressed from bad to worse. Had this man been operated upon the condition would have been made more disfiguring than before and the operative procedure may have been blamed for the destruction caused by the disease.

In reconstructing a nose a surgeon must be sure that three things are provided and if one or more are absent they must be supplied. There must be skin to cover all raw surfaces. This is obvious. There must be present a suitable framework to support the nose else the normal muscular action and the physiological tension of the tissues impair the result. The third necessity and the last to be recognized is that of providing an epithelial lining. When this is not done the exposed connective tissue contracts overcoming the correction. The lining may be mucous membrane, full thickness skin from adjacent or distant regions or perhaps Thiersch grafts.

When transferring skin from a distant part the tubular graft of Gillies may be used advantageously. The flap may be taken from the chest, forehead or top of head. Having outlined the flap required extend the incision in such a manner that there is a long pedicle properly placed. Then fold the pedicle on itself laterally, and unite the edges with sutures. Usually the pedicle is cut and tubulated and some days later when the blood supply has become established the flap is separated and placed in position. When the flap has united to its new bed the pedicle is severed, opened and returned to its original location, and the flap adjusted as may be indicated. When cutting the flap do not allow too much for contraction. Pickerell has described a method of transferring skin in which the tube is used as the graft.

The loss of substance of the nose and the portion deficient varies. Any type may be met with. There may be loss of the upper, middle of lower portion or combinations of these beginning either above or below. In addition to these the depth of the injury varies as regards loss of tissue. It is not necessary to consider each of the possible injuries and the combinations and distortions that may occur. There are a great many procedures to choose from when reconstructing a nose as almost a hundred different methods of obtaining the skin flap alone are described by various writers. The surgeon must call upon his knowledge, experience and ingenuity in meeting the conditions present.

The bridge of the nose may be flattened without destruction of tissue, there may be destruction of cartilage or cartilage and bone may both be destroyed in addition to the soft structures. The condition may be congenital or the result of disease or trauma. The depression may be high or low.

The easiest method of correcting a saddle nose is by the injection of some paraffine mixture. The immediate results of this treatment are all that could be expected but the aftereffects are sometimes not so good and I would advise against using this simple method, or, in fact, against putting any paraffine containing mixtures into the tissues anywhere. When injected these mixtures are taken care of in the body in one of two ways. They may become encapsulated and lie dormant or they may stimulate the growth of connective tissue and produce disfiguring growths. They are never absorbed.

Paraffine in the tissues is fine so long as it lies dormant but one can never tell how long this will be and which patients are the ones in whom paraffinomas will occur. When the injected material starts to enlarge it should be removed to overcome the disfigurement. Those who have been called upon to remove paraffine realize the great difficulties involved in so doing, as it is almost like trying to remove wax from a sponge.

The method which is applicable to most saddle noses and which gives the best results is that of building up the defect with rib cartilage, celluloid or ivory. I have found that when cartilage is used the patient suffers more inconvenience, by far, from the operation necessary to obtain the cartilage than they do from the work done on the nose. While cartilage is always at hand, is easily shaped and retains its size and shape, the same applies to celluloid to even a greater extent with the added advantage that there is only one incision and the patient is saved considerable pain.

The celluloid is properly shaped in the office and is perforated with a number of small holes to aid in its being held in position. I have never found celluloid to cause the least bit of trouble after being put into position. It seems not to cause any reaction in the tissues and is not absorbed.

(To be concluded)

The Diagnosis of Engagement in Vertex Presentations

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The importance of engagement in vertex presentations cannot be over emphasized when it is realized that, in the vast majority of cases, the engaged head will come through the natural passages. Nonengagement, with active labor, indicates some abnormality, and where such a condition exists the case may come to interference by Cæsarean section. Even in the funnel or male type of pelvis with its contracted outlet the delivery can usually be accomplished *per vias naturales*.

Realizing, then, the significance of engagement, it becomes of the utmost importance to recognize its presence or absence in the given case. To facilitate its diagnosis this brief paper has been written, the comprehension of which depends upon the following well known facts.

The biparietal diameter and circumference represent the widest breadth and perimeter of the fetal skull; above and below this, the head becomes smaller. If the head of a newborn baby is felt with the hands, beginning at the vertex and palpating downwards to the neck, it will be seen that the hands at first diverge until the parietal bosses are reached; here they are farthest apart. As the neck is approached they slowly approximate.

Fig. 1.—Nonengaged vertex.

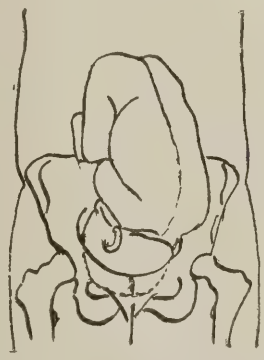

Fig. 2.—Engaged vertex.

(From Williams's *Obstetrics*)

Applying this to the abdominal examination of the fetus in utero, it must be kept in mind that the part of the skull below the brim cannot be felt. With both hands on the lower abdomen, there is, ordinarily, no difficulty in vertex presentations, in feeling the head. As one palpates from the body downward, the hands diverge on the skull. If the pelvis is encountered at this point, and no more of the head is felt, it is because the biparietal circumference is below and the vertex engaged. But if the hands, after diverging on the fetal skull, are found to be approximating, i. e., drawing near to the median line, it is then apparent that the biparietal diameter and circumference are above the brim, and the head, therefore, not engaged.

If the same idea is kept in mind in making the vaginal examination, the fingers on the vertex move outward; if there is no engagement, the fingers continue to move outward and the brim is felt below. Whether the head be small or large, or the uterus tonic or relaxed, by such vaginal palpation one can easily determine if the portion of the head above the brim is wider or narrower than the part below. Nonengagement is indicated if the fingers go outward towards the sides of the pelvis; engagement, if the fingers move towards the median line.

There is no great difficulty in applying this simple theoretical procedure even in the tall male type of pelvis, for here, in case of doubt, an examination under anesthesia will readily reveal the condition. The diagrams appended illustrate the application of the principle referred to above.

SUMMARY

1. In vertex presentations engagement can be readily determined.

2. In an abdominal examination the vertex is engaged if the hands diverge in palpating the head; the head is nonengaged if the hands converge.

3. In a vaginal examination the vertex is not engaged if the fingers continue to move outwards relative to the brim.

20 West Fiftieth Street.

Parenteral Ferments at the Service of Immunity from the Viewpoint of Evolution

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Beginning with the observation by Metchnikoff of the phenomenon of phagocytosis, the defensive mechanism of the human body gradually disclosed itself more and more as based upon a process of digestion. But while this basic conception is generally acknowledged as correct, many of the details of the process have remained in utter darkness, in spite of the tremendous and zealous work expended to grasp their meaning. Much of this condition of affairs is due, I believe, to our regretful lack of information as to the agents that perform digestion, namely, the ferments. It is, indeed, difficult, if not impossible, to form a correct opinion of, and to view intelligently, many of those phenomena of infection and immunity that still baffle us today unless the nature of the ferments, their origin and distribution, and their behavior under the ever changing conditions of health and disease become known more minutely. More light on the subject of ferments, and particularly of parenteral ferments, will, therefore, undoubtedly prove of great assistance in our quest to pierce the mysteries shrouding many of the phenomena of immunity. With the actors, that is, the ferments, better understood, the entire performance must, of necessity, gain decidedly in transparency and lucidity.

A general characterization of the ferments, so far as their differentiation and mode of action are concerned, has been given in a comparison of enteral and parenteral ferments furnished at an earlier date (1). It is our object now to show the latter, the parenteral ferments, from a general viewpoint at the service of immunity—staged as actors in the drama of infection, as they progress from their simple beginnings in the lowest forms of life to their elaborate working system, which exists today in the highest animals and in man.

The different parenteral ferments, that is, the ferments of the blood and tissues outside of the alimentary canal, have been given various names and are known as agglutinins, precipitins, lysins, amboceptors, antibodies, antitoxins, and so on. The inclusion of the antitoxins among the ferments may not correspond with the generally accepted view, but is fully justified from a scientific biological viewpoint, as I have shown in various papers (2, 3, 4). If, therefore, in the following lines the familiar word antitoxin is used for the purpose of facilitating the understanding, it should not confuse the fact that antitoxins are ordinary digestive ferments, obeying the same identical laws as other parenteral ferments do.

In our effort to disentangle the confusing mass of observations made in regard to ferments and their influence upon infection and immunity, and to establish a scientific basis for further studies, it will prove of great advantage to approach our problem from an evolutionary viewpoint by following the parenteral ferments during the ascendency of living creatures from their humblest beginnings to their highest stages of development. It is only in this way that many of the most perplexing and seemingly inscrutable immunity phenomena find a ready and plausible explanation.

The unicellular organisms that sprang into existence at the very dawn of budding life engulfed their food and prepared it for assimilation within their protoplasm. Each cell, therefore, digested its own food independent of other cells, just as in the dim, prehistoric ages each caveman fought his own battles. The most characteristic feature of this intracellular digestion, so far as it concerns us here, is the fact that the elaborated digestive ferments were retained strictly within the cell and did not appear in the surrounding fluid, just as it is the case, for instance, in the ameba of the present day.

As cells began to group together in the course of evolution to form more complicated beings, intracellular digestion was, at first, continued. As before, the food was engulfed by the individual cells and digested within their protoplasm, Metchnikoff found this intracellular digestion in existence still today in many animals of the lowest order, for instance, in actinians and molluscs, in spite of the fact that these creatures already have a special digestive organ. No ferments, however, are extruded into this alimentary canal. The food taken up enters the cells lining this canal and is there digested.

With the progress of evolution in the course of millions of years intracellular digestion was gradually abandoned. A community spirit, and with it a division of labor, developed, as one individual cell became more or less dependent upon the other. Consequently, concerted action became the order. This was true especially with reference to digestion. Its intracellular form gradually changed into the extracellular variety. Cells no longer performed this function individually. They ceased to depend entirely upon their own resources, just as human beings later on began to form communities, tribes and nations for mutual protection and united action. Ferments began to leave the cells to serve a common good. Consequently, in enteral digestion, digestive fluids with their ferments poured into the stomach and the bowels; while in parenteral digestion digestive ferments gathered in the serum.

This extracellular digestion, characterized by the extrusion of ferments from the cells into the surrounding fluids, is now preponderant in all higher living beings. However, even in the highest animals and in man, intracellular digestion is not entirely given up. It still exists side by side with extracellular digestion. There are even instances known where digestion may be placed at will within or without the cells. Metchnikoff gave us a striking example of this kind. If an alligator, kept at about 20° C., is injected with tetanus toxins, the poisons rapidly vanish from the blood without the appearance of

antitoxins in the serum. However, if an alligator is kept at a temperature of from 32° to 37° C., the injected toxins vanish while antitoxins appear in the blood in great numbers. In the first instance, while living conditions approach those of animals of the lower order, the toxins are destroyed within the cells by intracellular digestion and no specific ferments are extruded into the serum; in the second instance, while living conditions approach those of animals of the higher order, the extracellular digestion of the injected toxins is employed with an outpouring of ferments from the cells into the surrounding fluids.

But also in warmblooded animals, the cells which ordinarily extrude the ferments can be forced to return again to the aboriginal, intracellular digestion with its retention of ferments within the protoplasm if unusually heavy or long continued labor is imposed upon them and extraordinary efforts must be made to cope with the situation. Intracellular digestion is not only the aboriginal but also the more powerful and, therefore, the more efficacious digestion.

Conditions of this kind, effecting a reversal from the extracellular to the intracellular digestion, are caused artificially when, in order to produce antisera, specific toxins are injected into animals regularly for a long time. Thus, producers of antisera have found to their utter surprise and great dismay that horses, which are used, for instance, for the production of antidiphtheritic serum, after an initial abundant production of antibodies sooner or later arrive at a point where the specific antitoxins, in spite of continued injections of toxins, grow less and less in numbers, while the immunity continues to rise to its highest peak. "Paradox" cases of this kind have been reported by Behring, Roux and other observers without, however, giving any explanation as to the cause of this puzzling phenomenon. The assumption, as advanced by Sahli (5) and others, that the steady decrease in antitoxins is due to the exhaustion of the cells, can hardly be accepted. Progressive exhaustion of the cells would lead to a decreased and not, possibly, to an increased ability to work, as it is shown to exist by the continued rise of immunity. It is only from the viewpoint of evolution that a plausible explanation is possible. Under the load of work imposed upon them in consequence of the long continued injections of toxins, the cells of the horse, to meet the emergency, return gradually from extracellular to intracellular digestion, so that in spite of the continually rising degree of immunity less and less ferments appear in the blood.

There are also, even in the human body, places where intracellular digestion is retained permanently by Nature for the special purpose to suppress infections at their very beginning with the most effective means at her disposal. Intracellular digestion is, therefore, retained at such places of the body that are exposed peculiarly to certain infections and serve as portals of entry to their respective germs. Hence, we find this kind of digestion in the lungs, the throat and the urethra. As proof may be cited the well known clinical facts that occasionally in favorable cases of pneumonia, in light cases of diphtheria and in uncomplicated cases of gonorrhea antitoxins do not appear in the blood.

This circumscribed, local intracellular digestion at exposed places of the body is a very practical and extremely effective measure employed by Nature. The protection, thus granted, shall hereafter for convenience sake be designated as "portal protection"; and the local immunity developed at such places be called "portal immunity."

In the general scheme employed by the body when fighting infections the portal protection forms the first line of defense. The nonappearance of specific ferments, or antitoxins, in the blood during or after a given case of bacterial invasion is, therefore, proof that this first line of defense was not broken. Not until the portal cells succumb and the white cells of the blood, which form the second line of defense, begin to participate in the battle in large numbers, do specific ferments aggregate in the serum, as now the intracellular digestion of the portal cells is gradually supplanted by the extracellular digestion of the leucocytes. However, the enormous number of antibodies we frequently find in the blood during the course of infectious diseases does not make its appearance until also the third line of defense, namely, the fixed cells of Aschhoff's reticuloendothelial digestive apparatus, becomes engaged in the struggle. This third line of defense is by far the most extensive and, therefore, the most powerful. It gets, however, not active until the invading organisms appear in the blood and lymph, and thus, can be taken up directly by these fixed cells themselves.

Further clinical examples of localized intracellular digestion at portals of entry are not wanting. They represent some of the most puzzling phenomena that have been brought to light during immunological researches. But, though their more minute presentation is reserved for a later paper dealing with the biology of positive and negative skin reactions, one may be given here to typify this class by referring to the experiments of Frankenstein (6). In twenty infants from three to ten months old, he was unable to demonstrate four to twelve months after smallpox vaccination in any instance the antibodies in the blood that are always demonstrable in adults under such circumstances. Nevertheless, there occurred in all children that were revaccinated four weeks later an earlier reaction, proving that with the first vaccination a partial immunity had been accomplished, that is to say, that specific ferments had, indeed, been developed but were retained within the cells—an evolutionary quality of the skin of infants that is lost in later days. The modus operandi of the portal protection, characterized by intracellular digestion with the absence of ferments from the blood stream, gives us also here a ready and plausible explanation.

In all instances described above the ferments appearing in the blood are derived from living, functioning cells. Bergel (7) was able to follow the process of their extrusion under the microscope by observing the gradual development of agglutination and lysis of erythrocytes around macrophages that were busy digesting devoured red cells.

The extrusion of ferments is, therefore, physiological under such circumstances. It follows definite laws and can be studied in all its details when specific particulate antigens, such as the blood of pigeons or sperma, are inoculated into the abdominal

cavity of nonimmune animals. Such experiments were first conducted by A. Wolff (8). Without exception, the reaction began with phagocytosis and intracellular digestion. But even phagocytosis was very slow at first, so long as the cells of the experimental animal were still untrained. Thus, after the first injection, it took twelve to fifteen hours until a few of the injected blood or sperma cells could be detected within the phagocytes, while not until after sixty-four hours a few scattered instances of extracellular lysis by extruded ferments made their appearance. After the second injection, phagocytosis progressed at a lively rate already after one and one half hours and was accompanied by a widespread extracellular lysis. After the third injection, extracellular lysis was already completed before phagocytes appeared on the field of action.

So we see that the first stages in the development of immunity still today are ushered in by the same aboriginal phagocytosis with intracellular digestion with which the first living beings started out on the road to ascendency. Here, as well as there, the higher stages of development, characterized by the extrusion of ferments and extracellular digestion, follow later. These experiments of Wolff, thus present the entire process of evolution in a nutshell, so to speak, with the only difference that Nature accomplishes now within comparatively few hours what took millions of years of experimentation for its development. They furnish but one of those numerous instances which allow the initiated to retrace Nature's steps and to dissect the different stages in the evolution of immunity with the same precision as we can dissect the progressive stages in the evolution of the human embryo by following its growth in its mother's womb.

The initial slowness of the elaboration and extrusion of specific ferments, as amplified above, is of greatest clinical importance, inasmuch as in the case of infectious diseases the invading specific organisms have ample time for extensive multiplication and distribution throughout the body before the defensive mechanism of the host has developed sufficiently to encroach upon their progress. The efficacy of antisera, for instance, of antidiphtheritic serum, is, under these circumstances, due to the fact that their specific ferments, incorrectly called antitoxins, supply, when injected with the serum, the urgently needed defensive ferments at a time when the body is still unable to furnish them, so that the battle against the invaders can begin effectively at a much earlier time.

This highly developed mechanism of parenteral digestion with its extrusion of ferments into the blood and extracellular digestion is not employed by the body unless the foreign antigen, presented in the body substance of the invading organisms, consists of protein, as is ordinarily the case. However, if the foreign antigen consists of fat or fatlike substances, the conditions are reversed. Fat and fatlike substances, for instance, the body substance of the tubercle bacillus or of the treponema, can be digested only intracellularly. The parenteral digestion of fat is, even in the highly developed body of man, to a great extent still in its original, primordial condition. This fact stands out also in enteral digestion. In the bowels, too, the digestion of fat by fat splitting ferments has, up to the present day, remained upon a low state of development and is in its efficacy millions of years behind the digestion of protein.

A number of experimental findings confirm the intracellular digestion of fat and fatlike substances: 1. According to Doerr (9), "it has not been proved that the injection of tuberculin into normal human beings or animals leads to the elaboration of precipitins and agglutinins." 2. Parenteral injection of pure fats or lipoids does not increase the lipolytic action of the blood or only slightly. Lipolytic ferments are, consequently, not extruded into the blood during the digestion of the injected material—a characteristic of intracellular digestion. It is due to this fact that therapeutic sera, which depend for their efficacy upon the presence of specific ferments, have so far not been developed against tuberculosis and syphilis and have no prospect to be developed hereafter. 3. Lipoids, when pure, do not cause anaphylaxis, as this phenomenon predisposes the presence of specific ferments in the blood (10).

Fat and fatlike substances not only require for their disposal intracellular digestion but also the intervention of special cells, namely, of those cells that are able to elaborate fat splitting ferments. To these cells belong principally the lymphocytes and their derivatives, the plasma cells (11). It is for this reason that these two kinds of cells predominate in the cellular infiltrations encountered in tuberculosis and syphilis. Of the fixed cells, the endothelial cells of the blood and the lymph vessels, too, elaborate lipolytic ferments in addition to their proteolytic ferments. They play, therefore, an important part in the battle of the body against these two infections. The polymorphonuclear leucocytes have only proteolytic ferments and, consequently, cannot participate in the struggle against tuberculosis and syphilis (12).

Nevertheless, there are circumstances under which specific ferments appear in the blood during the course of tuberculosis and syphilis. But their appearance is, then, not physiological, as they are not extruded by living, functioning cells. It is pathological. They are thrown into the circulation in consequence of the death and dissolution of the cell. The interesting details of this extremely important immunological phenomenon are not germane to our present topic and are reserved for a later paper at their proper place.

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Endemic Influenza

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The general practitioner, who sees diseases at their beginnings, has, during the past few years, yielded to the usual demand for an immediate diagnosis and now has a tendency to call almost all acute conditions influenza. Due to the fact that most acute conditions, and the initial stage of many chronic disorders (more perhaps than we now suspect) begin with fever and signs of upper respiratory inflammation, the term influenza will fit nearly all of them at this stage. When the fully developed disease appears it is conveniently called a sequel. In this way contagious diseases, during the early stages when most easily disseminated, are usually called influenza. This tendency for physicians, as well as laymen, to call almost any acute condition influenza, not only aids in the spread of contagious diseases, but often leads to disastrous results for the patient. More pernicious is its tendency to obscure our researches into the beginnings of disease. For these reasons, as well as several others which I will mention later, it would seem advisable to replace this term with one not bearing such a degree of finality.

Death not infrequently results in cases where the patient might have been saved by surgery or some other specific mode of therapy, had not the facile diagnosis of influenza lulled those concerned into a false state of security. Children with fever and abdominal pain are often said to have "abdominal flu" and prove later to be suffering from appendicitis or intussusception. In such cases how much better it would be if we would remain on our guard, using such terms as "fever of unknown origin," or "febricula," or, if further mysticism is necessary to save one's pride, "ephemeral fever." Such terms will at least fool only the lay people, and not the physician as does "influenza" so frequently now.

The fact that patients get well after running a fever for a few days without the development of other symptoms, is apt to be taken as proof that the condition was really influenza. This is not necessarily the case, because so many of our infectious diseases present abortive forms. In only a small proportion of poliomyelitis cases, for instance, does paralysis ever develop. The nonparalytic cases are invariably called influenza. It is undoubtedly these cases which are responsible for the spread of poliomyelitis. A short time ago I saw a boy who had become paralyzed in both legs. One week previously he and his seven brothers and sisters all had an attack of fever which was called "summer flu." Undoubtedly they all had poliomyelitis, but fortunately paralysis developed in only one. There had, of course, been no institution of quarantine and several more cases developed in the neighborhood with the usual number of cripples resulting.

During the great pandemic of 1918 it was comparatively safe to call any case with fever and signs of upper respiratory infection influenza. Even at that time an occasional case turned out to be pyelitis, mastoiditis, or something else before the end. These latter conditions were then usually considered complications or sequelæ, which was certainly not always the case. The original fever was more likely the prodromal signs of the disease which became obvious later when well known peculiarities developed. During epidemics, unfortunately, due to our present lack of knowledge concerning this disease, such mistakes seem unavoidable. In the case of endemic influenza, however, such mistakes can be avoided by the simple expedient of using a less irrevocable term. The present plan of calling the prodromes 'influenza' and the fully developed disease a sequel, has resulted in the absurd belief that practically all the afflictions to which human flesh is heir are sequelæ of influenza.

Often tuberculosis patients state that they had several attacks of influenza which finally resulted in tuberculosis. Their sanatorium histories refer to these attacks of influenza without questioning the diagnoses. The old lunger tells you that his tuberculosis no longer bothers him, but that he has frequent attacks of "flu" (which do not require the rest, etc., which he knows would be necessary if he were having tuberculosis flareups.) All too frequently his physician fails to perceive the error in his reasoning.

Sir James McKenzie emphasized the importance of closer study of the beginnings of disease. This stage is seen only by the patient and the general practitioner, both of whom are so prone to call everything influenza. The general practitioner, in his important rôle as observer of the beginnings of disease, instead of helping to clarify matters, as did Sydenham, is casting a veritable veil over our clinical researches by his constant use of the meaningless term, "influenza." For instance, it is believed that epidemic encephalitis may be a sequel of influenza largely because so many of the patients give a history of recently having had influenza. Is this socalled influenza not more likely the onset fever of encephalitis? There is little more reason to call this initial fever influenza than to call the onset fever of poliomyelitis influenza. Homer Swift (1) has recently pointed out that rheumatic fever, and many other diseases no doubt, show different types of manifestations at different stages (like syphilis) and at present we recognize only the later stages. How are we ever to recognize these early stages if they continue to masquerade under the guise of influenza as they are undoubtedly doing at present?

For a number of years, in taking the past medical history, it has been customary to question a diagnosis of typhoid fever because it was realized that the beginnings of such diseases as tuberculosis, syphiliis, etc., were often erroneously called typhoid. For the same reason it is now high time we look askance on a diagnosis of influenza.

Fever is the general reaction of the body to an

infection and is the background of the symptomatology of infectious diseases. Separation into entities depends upon peculiarities other than the fever syndrome. Influenza, having no such peculiarity, is, apparently, the residue of acute fevers left after removing those accompanied by some pathognomonic feature. In this respect it bears much the same relation to acute diseases as neurasthenia bears to chronic diseases; and, as in the case of the latter, the number of influenza diagnoses bears an inverse ratio to the amount of study given to cases.

Upon closer observation the "nervous influenza" case will frequently prove to be encephalitis, apical pneumonia, chorea or one of the meningitides; the "respiratory influenza" case, measles, poliomyelitis, or tuberculosis; the "abdominal influenza" case, appendicitis, intussusception, food poisoning or dysentery; the "febrile influenza" case, pyelitis, mastoiditis, rheumatic fever or bacterial endocarditis; and the "summer flu" case, poliomyelitis or typhoid. An "influenza" case is, therefore, one calling for the utmost care in study and observation. Rather than easy, as is commonly supposed, it is very difficult to diagnose. Rather than common, it is probably rare and it seems entirely possible that further study might eliminate it altogether. There are no definite criteria by which to diagnose it; its etiology is unknown; there is no definite pathological picture; its course is uncertain; and its symptomatology is devoid of any peculiarity. Since relinquishing the Pfeiffer bacillus as the probable cause, the existence of endemic influenza as a separate entity rests chiefly on the theory, that since we are unable to trace the origin of the pandemics, certain of our "colds" may be mild forms of the disease which serve to carry along the infection until some unknown factor raises its virulence. This certainly seems logical, but, in the absence of differential criteria, are we warranted in attempting to state just which of these colds are responsible for this sinister influence?

The superficial manner in which physicians arrive at a diagnosis of influenza has naturally led lay people to the conclusion that it is very easy to diagnose. They have therefore ceased calling him for fevers, feeling (quite correctly in most cases) that he will say "flu" and give aspirin, both of which they are quite able to do themselves.

As the title indicates, our criticism of the term "influenza" refers only to the endemic type and has no reference to the great pandemics. The same criticisms, however, no doubt apply to the numerous lesser epidemics which have been reported each winter since 1918.

CONCLUSIONS

The term "endemic influenza" should seldom, if ever, be used because:

1. It is casting a veil over our search for the beginnings of disease.
2. It aids in the spread of infectious diseases.
3. It delays diagnosis and specific treatment.
4. It encourages lay people to disregard acute fevers.
5. "Fever of unknown origin," and "febricula" are not subject to these objections.

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The Diagnosis and Conservative Treatment of Renal Calculi

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The origin of renal calculi is as yet not clearly understood, although it is accepted by many that there are certain contributing factors. These are stasis and interference of the urinary flow, as well as infection. The urine is more than a mere watery solution of certain salts, for, as Walker states, it has the power of holding a greater proportion of some salts in solution than has distilled water.

Spitzer and Hilkowitz maintain that the urine contains normally a number of colloids delicately balanced to maintain the solubility of solids. When this is thrown out of equilibrium by any pathological process, be it of metabolism or alteration in the urinary passages, the formation of calculi is favored. Thus there is no necessity for a stone nucleus, as any colloid thrown out of suspension may be the starting point for stone formation. On the other hand I have met with cases of long standing persistent phosphaturia, where the urine never failed to show many visible particles of what proved microscopically to be earthy phosphates, and yet no calculi formed in the kidneys or bladder, after having been observed for six years. I shall, however, not delve any further into the etiology, since we are now more concerned with the diagnosis and treatment.

Modern urology calls for the intelligent interpretation and use of the cystoscope, x ray, pyelogram, x ray catheters as well as renal function determinaiton. These agencies make it pleasurable to pursue the practice of our specialty and one often wonders how our confrères of years ago could possibly do without them. Nevertheless there are cases where the x ray is of little or no help and one must be on his guard before coming to any definite conclusion. From the clinical point of view patients with renal calculi divide themselves arbitrarily into the following groups:

I. This group includes cases presenting classical symptoms of pain in the posterior renal area which may or may not radiate to the groin, along with other well known symptoms. Then ureter catheterization will often meet with obstruction on the side in question, depending on the size and position of the calculus. The ureter catheter may on a second examination still find the obstruction or will sometimes pass beyond the calculus. When the x ray reveals a shadow at the corresponding point, it makes the diag-

nosis of ureter calculus conclusive. One must, however, be on his guard and assure himself by the use of the x ray catheters that the given shadow is in the ureter and not a phlebolith. Bransford Lewis has an ingenious method which may be used with certain modifications in questionable shadows.

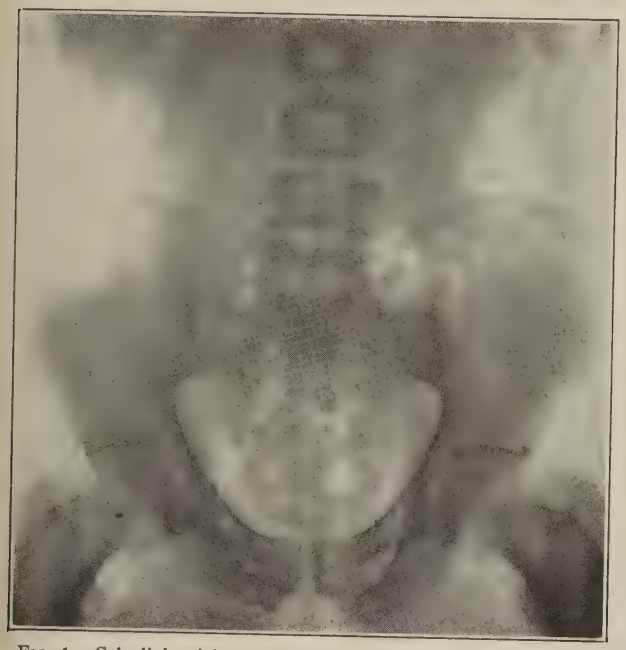

FIG. 1.—Calculi in right ureter, dislodged after four manipulations.

As pointed out by Guy L. Hunner, the incidence of stricture associated with stone is frequently found in the ureter and must not be overlooked.

II. There are cases where all symptoms point to an acute abdominal condition and if the affection is in the right lower quadrant, it creates a misleading picture. Thus, if the calculus is lodged in the lowermost part of the right ureter, the symptoms will often simulate acute appendicitis. Cystoscopic examination will often show edema of the right ureter opening and also obstruction to a passing ureter catheter. Such cases become especially perplexing when the x ray does not reveal any shadow of a calculus. One such case, that of a young woman, came under my observation recently. The patient's relatives were told that although the x ray did not reveal any shadow of a stone, the diagnosis was nevertheless made of ureteral calculus. Not contented, the patient left the hospital and was placed under the care of a well known surgeon who promptly performed an appendectomy. Four days later there developed a violent attack of right renal colic which necessitated another operation during which a calculus was removed from the lower third of the right ureter.

III. Perhaps the most fascinating cases for diagnosis are, a, those presenting clinical symptoms of stone on one side, and revealing a stone by x ray and ureter catheterization on the opposite side; also b, those cases presenting clinical symptoms of stone on one side, although the stone is on the opposite side, without showing any x ray shadow at all. A patient may be brought to the hospital with symptoms simulating appendicitis. Ureter catheterization may or may not reveal an obstruction, but the x ray will show a shadow on the opposite side (Fig. 2). Then again, the same renorenal reflex may be present without the x ray revealing a shadow, but if the stone is in the lowermost end of the ureter, edema will be present at the ureter orifice, as well as partial or complete obstruction to the passage of a ureter catheter. In two of my recent cases the attacks of pain were constantly on the opposite side of where the calculi were lodged, but often ureter catheterization and pyelography, the spasmodic renal colic attacks shifted towards the truly affected side and never again involved the opposite side.

IV. Calculi in the kidney or renal pelvis proper show a wide range of variety. There are quiescent stones that may be lodged for many years causing various degrees of destruction to the renal parenchyma and yet cause no other symptoms beyond those of an occasional dull backache, or those of chronic cystitis.

Some twelve years ago I called with a patient on Professor Israel for consultation. The patient showed several calculi in both kidneys. He advised without further delay to operate on the worst side, for the removal of the calculi. The patient being a busy man and wavering, neglected to do so and still carries the stones with him to this day, although the bladder symptoms are increased and the renal function on the worst side is markedly impaired. But not all patients will escape with so little hazard by disregarding the necessity of dislodgement of one or more calculi in the pelvis when infection takes place. Their presence as is known, sets up a pyelitis leading to calculous pyonephrosis and ultimately producing sacculated local abscesses with complete destruction of the parenchyma (Fig. 3). The lesion does not stop here, but will eventually cause cystitis with an ascending infection of the opposite side.

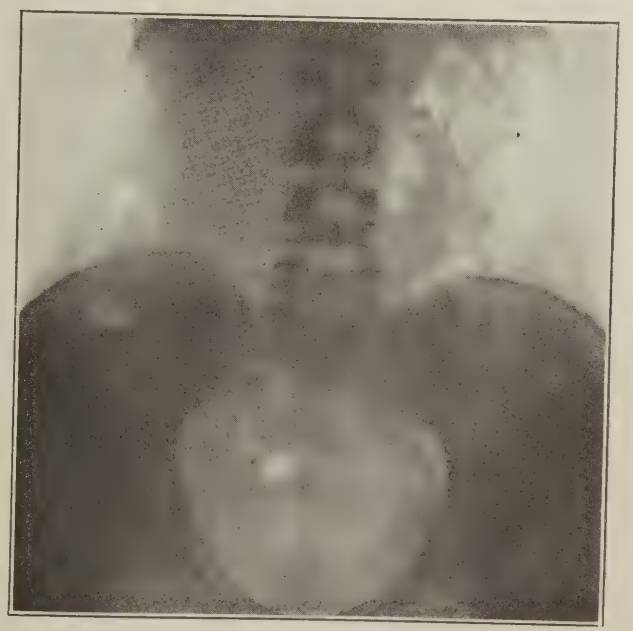

FIG. 2.—Calculus in the left renal pelvis (case III) giving rise to symptoms simulating appendicitis.

It is our aim to plead for the use of conservative methods for the removal of ureteral calculi, especially in unimpacted cases. The nonsurgical removal has

been used by many urologists before. My own experience only confirms previous findings of others, strongly endorsing such manipulations. The basic principle of the treatment lies in dilatation of the ureters plus lubrication. To accomplish this, the maximum amount of anesthesia is desired of the bladder,

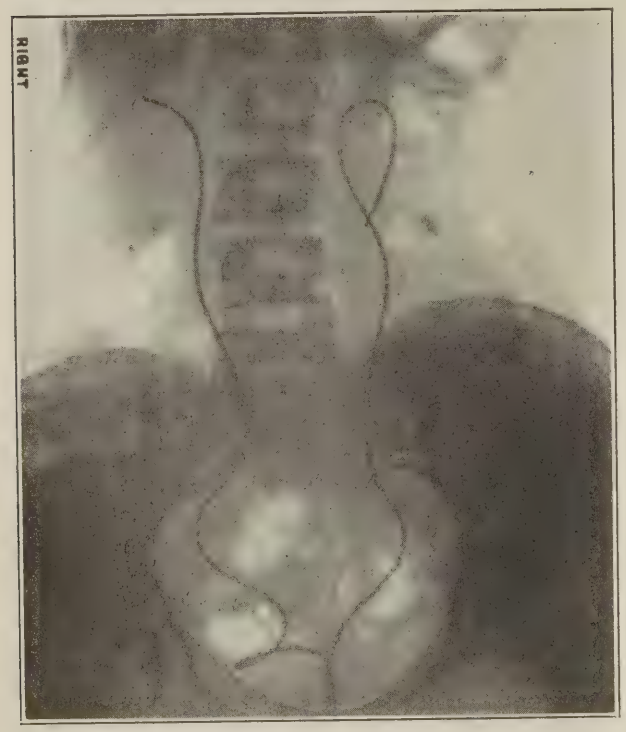

Fig. 3.—Same case as Fig. 2, with the ureteral catheter coiled up in the renal pelvis giving impression as if the shadow is extra renal.

urethra and ureters. We are in the habit of using the following routine:

About fifteen minutes prior to cystoscopy, a rectal suppository is inserted, containing half grain each of powdered opium and extract of belladonna. Then the urethra is distended with a two per cent. solution of novocaine which is held in by a penis clamp for at least ten minutes so that some of it invariably oozes back into the posterior urethra and bladder. Patients who had dreadful remembrances of previous painful cystoscopies often express surprise that the same examination can be performed with little or no pain or discomfort when this routine is carried out

I am in accord with Crowell when he states that most ureter stones may thus be removed by one of several manipulations.

After a given stone is located by the use of the cystoscope, we use on one side a No. 6. catheter and on the other side of the cystoscope a No. 6 or 7 stiff bougie. First the catheter is inserted and pushed up to the calculus, at which point the local anesthetic is injected, and wait for several minutes. Then we inject sterile olive oil and try now to move the catheter beyond the stone. Whether we succeed or not, we now use the bougie from the opposite side of the cystoscope without removing the catheter, but rather go along the side of same, thus getting the catheter and bougie at one sitting into the one ureter without inserting the cystoscope twice. This assures drainage as well as dilatation.

In office practice the bougie and catheter may be left *in situ* for one to two hours, whereas in the hospital it may be left in for twenty-four hours. While such one manipulation will sometimes cause expulsion of a stone several days later, other cases may require several manipulations with ultimate success. Of course if the stone is of large proportion and impacted in the lower end of the ureter for several months, there may be a considerable amount of ureteritis binding the stone down firmly. If no progress is noticeable or if no passage of a catheter or bougie is possible, one must resort to surgery. Crowell wisely states that "the simplicity and safety of this method is very evident." It is simple in that any one reasonably skilled in cystoscopy can do the work in his office or hospital with perfect safety without a general anesthetic or marked suffering on the part of the patient. It is safe because no trauma of consequence is produced—and in addition, the kidney's function not being inhibited, drainage frequently improves the renal function.

The treatment of calculi in the kidney or pelvis proper will depend very largely upon two factors, namely: a, the amount of pain and suffering caused; b, the presence of clear or infected urine and the extent of the renal function.

There being no appreciable pain or suffering, especially associated with aseptic urine, it may be wise to give the calculus a chance to descend if the size warrants same. If, however, there is considerable suffering experienced and associated with infection

Fig. 4.—Case III. Dilated pelvis, with the pyelographic fluid submerging the calculus lodged in the lower calyx.

and renal function impairment, then surgery is the method of choice.

Case I.—D. S., female, aged twenty-five, admitted to the Bronx Hospital (12906) with a history of having had two days previously a sudden severe attack of pain in the right lower quadrant of abdomen.

The pain did not radiate and subsided spontaneously. Two days later she experienced another sudden sharp severe attack of pain in the right upper quadrant of abdomen, near the costal margin and radiating to the back as well as to the groin. This pain was relieved by the hypodermic injection of morphine and the patient had several intermittent attacks after this one.

Cystoscopic examination revealed an obstruction to the ureter catheter on the right side about four inches above the bladder. The x ray revealed a shadow at the corresponding point. Four manipulations were done as described above, at intervals of one week. The pain stopped and the shadow as well as the obstruction disappeared as the stone passed.

Case II.—T. E., female, aged nineteen, admitted to Bronx Hospital January 20, 1925, with a history of having developed two days ago an attack of pain in the right lower quadrant of abdomen. The pains were stabbing in character and felt anteroposteriorly but not radiating in either direction. Patient vomited several times and had chilly sensation. She had a similar attack three weeks ago, but now the pain appeared most severe on urination, leaving a sense of rawness. An examination of the urine showed large traces of blood.

Cystoscopic examination revealed a normal bladder; ureter catheter goes up to the very pelvis of the left kidney. On right side, catheter met obstruction about two inches above the ureter orifice. X ray revealed normal outline of both kidneys, and no shadows of calculi.

A diagnosis of renal calculus was made irrespective of the negative x ray findings and patient was advised to wait for further observation and treatment. After a second examination with similar findings she left the hospital. She was operated upon for appendicitis at another institution, but four days later there developed another violent attack of renal colic and another exploration revealed a calculus at the lower third of right ureter.

Case III.—I. L., female, aged twenty-five, admitted to the hospital (13484) with the following history: On the day previous to admission she was seized with an attack of severe pain over the right lumbar region as well as in the lower right quadrant. There was no true radiation of pain, as it was simultaneous in both regions. No urinary symptoms. Cystoscopic examination revealed a normal bladder. The x ray ureter catheter met with no obstruction on either side. The x ray, however, revealed a shadow of quite a large stone in the opposite or left renal area. The first impression was that the shadow was extrarenal, but a pyelogram and another plate showed that the suspected shadow is covered by the pyelographic injection fluid and also showed a dilated pelvis. This made the diagnosis of a large calculus in one of the calyces conclusive. There was no means of enlarging the calculus in a descending process and a pyelotomy was performed.

Case IV.—J. D., aged thirty-five, male, gave the following history: Had his first attack of renal colic on the right side six months ago lasting several hours. The pain ceased under treatment but had a similar attack two days later. The x ray taken then was negative. He was seized with a severe constant pain over the right lower quadrant, which became more intense at urination. Noticed some blood in urine.

Cystoscopic examination revealed the following: Normal bladder. Right ureter normal and permitted the x ray catheter to pass practically to the renal pelvis. Left ureter while it appeared normal showed an obstruction two and a half inches above the ureter orifice, after having tried with several different catheters and bougies. The x ray film did not reveal any shadows, nor did the ureterogram show any stricture.

Treatment was given at the office and patient went home few hours later. Two days later there again developed a severe attack of pain, and this time over the left lower quadrant and none on the right. This now corresponded with the physical findings. Cystoscopy now revealed a very edematous left ureter opening, and obstruction to the catheters and bougies about three quarters of an inch above the orifice. Treatment as described above was now given. Four days later he reported that all pains had ceased and that the stone had passed.

Case V.—Mrs. M. L., aged forty-eight. Previous history revealed that six months ago she suffered from carbuncles on the vulva as well as on one ear. Present history: Nine days previously there developed sharp pain over the right renal region, at times radiating to the groin. Also complained then of frequency of urination and noticed hematuria. Cystoscopic examination revealed a diffuse cystitis, but both ureter openings appeared normal, no ulcerations or edema. The x ray catheter met with distinct obstruction on the right side about three inches above the orifice. Left one passed all the way up. A ureterogram revealed a stricture and a markedly dilated ureter above the stricture in the middle third of ureter on the right side. No shadows of calculi were visible.

The ureter was gradually dilated with bougies and catheters at intervals of about ten days and irrigated with silver nitrate one to three thousand. After four dilatations, no visible obstruction could be detected any longer. A few weeks later she wrote that she was feeling fine and free from any symptoms (Fig. 4).

With the exception of the first case, these cases were selected because of their atypical character and interest. In the entire series the sodium salicylate renal function test showed marked impairment of renal function whenever ureteral obstruction was found.

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The Control of the White Blood Cells

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Since the publication of my paper on induced leucocytosis (1) last October, letters have been received which expressed doubt as to the extreme importance of the white cells in the phenomena of resistance to infection. Fortunately there is a case of epithelioma under my observation and direction, a history of which, with plates, is my answer to the criticism.

The patient is a man of fifty-three, who has led an active life, largely in the open. Intestinal stasis and pyorrhea for many years, amebic colitis from June, 1917, until December, 1919, evidently caused by the prolonged stasis, for there were one hundred and twenty-five men in the company at the time of its onset, among whom there were no other cases. For this colitis he was treated for several weeks. The malady was finally successfully treated by a series of hypodermic injections of emetine, accompanied by large doses of subgalate of bismuth.

In April, 1922, there was an impacted gallstone, under the medical care of Dr. Nightingale, Southampton, and afterwards of Sir Arbuthnot Lane in London. The stone got through the duct on the fifth day. The history was otherwise negative, including the Wassermann test.

The foregoing account would seem to indicate that the next lesion of interest would be a cancer, thus proving the truth of the teachings of Sir Arbuthnot Lane, that all malignant growths have the field prepared for their activity by prolonged stasis and intestinal poisons.

In June, 1925, two small reddish brown spots were noticed over the left malar bone. One of these in particular slowly grew larger. About the middle of August I made a diagnosis of epithelioma. A few days thereafter it was necessary to have a control for counts before and after the intravenous injection of mercurochrome. This patient was used primarily for these counts and also to note the effect of the expected increase in white cells on the lesions.

Dr. Siegenbeek van Heukelom, in the Children's Hospital, made a count of white cells which was 8,000 per cm., administered seven and a half c. c. of a one per cent. solution of mercurochrome, and sixteen hours thereafter made another count, which was 9,500. Both lesions in the opinion of Dr. van Heukelom and myself appeared much better, and the smaller one disappeared. In about ten days the other, however, appeared a bit more active.

On October 2nd the patient was taken to the Radiotherapeutic Institution for a consultation. Lammers, Molenaar and van de Linden, röntgenologists, agreed that it was an epithelioma and advised the immediate application of radium. This was done under the direction of Molenaar for sixteen hours (800 milligram hours). An areola surrounding the lesion soon appeared, which rapidly grew larger, until the fourth day, when there was pronounced elevation and intense itching. The observer was now convinced that while the radium rays had actually destroyed the malignant cells, it had also stimulated the production of white cells, for the demolition and removal of the tissue which had gone to make up the growth.

On October 16th Lammers and Molenaar agreed with me that there were still some active malignant cells. Another application of radium was made for two hours (200 milligram hours) at the end of which a very different appearance was shown, from that which had followed the longer application. Now there were shrivelled, whitened epithelial cells, over an area of about half the size of the scab shown in Fig. 1, and just behind this a much smaller area of whitened cells at the site of the lesion spoken of before, and which had not been seen since the administration of the mercurochrome.

Fifty hours after the application of the radium for two hours, the count of white cells was 8,900.

There followed during the succeeeding days the formation of the scab, with a large areola, shown in Fig. 1. On October 28th the site of the lesion was indurated, somewhat elevated, and showed little tendency toward the throwing off of the scab. Determining to hasten this process and to make a photographic record of its progress, the patient was taken to a photographer to show the condition on that day. This is shown in Fig. 1. Then to van Heukelom for four tenths neosalvarsan in eight c. c. of water. The count twenty-four hours thereafter was 11,000 cm. and there was a noticeable difference in the appearance of the lesion, its elevation being much lower and appreciably softer. Forty-two hours after the injection of the neosalvarsan a second photograph was taken (Fig. 2). The difference in the size of the lesion, as well as the change in the surrounding areola, is shown. Fig. 3 was made on the fifth day after the neosalvarsan and shows still further progress. The four photographs taken in seven days show clearly the work of demolition of the white cells.

To make deductions which seem inevitable to me it appears that prolonged and continuous stasis is a necessary precursor of cancer, as Sir Arbuthnot Lane has so fully told in his many papers on this subject; that a daily formed stool is an indication of stasis; that the waste which is emptied today, for example, should have been done yesterday; that a copious use of liquid paraffine is an insurance against cancer. I also believe that the increase in white cells that follows the use of arsenical preparations is a useful adjunct to radium in malignant disease.

In all the preceding reports of the beneficial effects of the control of the white cells I have attempted to tell only what I have seen or known to be true from the reports of confrères with whom I have been associated. Now, however, that objections to the idea have been raised, I think of a means of proving it. So I make the suggestion, as follows:

If any scientific fact is well established it is that quinine is a specific against malaria. I believe, however, that it is not a specific, that it derives its potency from the stimulation of the production of white cells. A simple test for the proof or disproof of this belief

would be to give to an adult infected with furunculosis one gram of the bihydrochloride of quinine deep in the gluteal muscle. I know that in a strong man there will be an increase in white cells of five to six thousand in twenty-four hours. I believe that after three or four such injections there will be no more boils in that person.

I have never seen this done but I feel sure of results, so the belief is recorded.

There is only one constant element in immunity, whether innate or acquired, and that is phagocytosis. The extension and importance of this factor can no longer be denied.

We may even attempt to increase phagocytosis in surgical operations, especially in those on the peritoneal cavity, by setting up there an artificial aseptic inflammation by means of various substances, innocuous in themselves, which attract a large number of leucocytes. In laboratory practice this method is in daily use for the purpose of increasing the resistance of an animal against the intraperitoneal injections of various microorganisms, and Durham has suggested the extension of the same method to human medicine. Certain surgeons have already made attempts in this direction (2).

In a series of carefully controlled determinations Dr. Seager Thomas and I found that the administration of the following drugs stimulated the production of white blood cells: neosalvarsan, mercury, quinine, autogenous and stock vaccines, diphtheria antitoxin, colloidal manganese, turpentine, and whiskey. Clinical observations in the treatment of many infections seem to indicate that the most useful agents are those which produce the greatest increase in the white blood cells and the maintenance of that increase for the longest period. The known effects of the administration of the foregoing drugs appear to show that the principal factor in the demolition of pathological tissue, the repair of wounds and resistance to infection, is due to the number and activity of the white blood cells. In the control of these cells I have seen surer results, and a smaller number of failures than in any other plan in the treatment of infections.

Dr. Edward S. Cowles of New York reports the case of a patient who had suffered over a period of ten years from colitis due to streptococcus infection of the lower colon, with persistent recurrent attacks of diarrhoea, with blood and mucus, and acute tenderness over her abdomen.

Repeated bacteriological examinations were made of the feces by a New York laboratory, with always a final remark of this nature: "Streptococcus viridans has pathological significance especially when found in large numbers as was found in this instance." On March 3, 1926, stools were submitted to this laboratory for a complete analysis and report in order to isolate the germs, to grow them, and to make a thorough determination of them. This examination of the stool was completed March 18th, with the following final remarks: "Streptococci are predominant in practically all the aerobic cultures. Streptococcus viridans is not a normal inhabitant of the intestines and its presence has usually pathological significance. There is a distinct indication of an inflammatory condition in the intestines and it is reasonable to believe that streptococcus is the causative agent. In the cultures from the washed mucus streptococcus fecalis and streptococcus viridans were practically the only organisms recovered."

Immediately thereafter one injection of sulpharsphenamin (0.05 gr.) was given the patient, and four days later on consultation with me, an injection of salicylate of mercury, gr. I. Then on March 26th another specimen was submitted to the laboratory, with the following report, March 29th, in the final remarks: "In comparison with the previous specimen, this specimen shows a distinct improvement so far as the streptococcus infection is concerned. The streptococci have practically disappeared from the stool and instead the B. coli show greater viability which is always a favorable sign." The tenderness over the patient's abdomen has disappeared, the stools are normal in appearance, with no inflammation by external examination or proctoscopic examination.

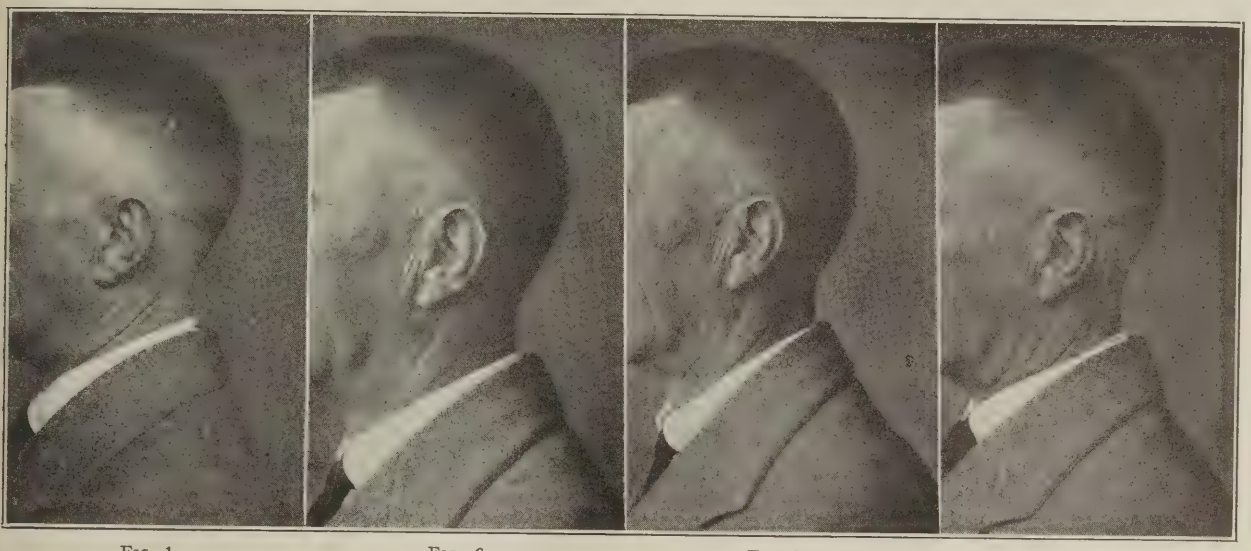

FIG. 1 FIG 2 FIG. 3 FIG. 4

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Trichophytosis of the Glabrous Skin as a Clinical Problem

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(*Concluded from page* 382)

DIFFERENTIATION FROM OTHER DERMATOSES

Among dermatoses to be differentiated from trichophytosis can be mentioned pityriasis rosea, which may present a close resemblance with a patchy disseminated ringworm of the body. The tawny yellowish color, festooned shape of the lesions, absence of itching and of the epidermal collarette, bathing trunk type of distribution and selflimited course and also the lack of tendency to secondary eczematization, would speak strongly for pityriasis rosea.

Seborrheic dermatitis, particularly located in axillæ and groins, may give rise to some confusion. However, on analysis of the morphological details differentiation can usually be made without difficulty. In seborrhea one usually finds lesions on the scalp characteristically descending from the hairline on the face, neck, sternum, and interscapular regions; the lesions show greasy, heavy, yellowish scales and itching is usually mild or absent. Another condition that may give rise to confusion in diagnosis is the socalled infectious eczematoid dermatitis described by Engman. Here also a detailed morphological analysis in most cases is sufficient to effect the differentiation.

Infectious eczematoid dermatitis caused by the staphylococci or more likely by a mixed infection of staphylococci and streptococci, presents, as a rule, a picture of impetiginous eczema with a marked exudation and crusting. It commonly follows a superficial trauma or abrasion, rapidly spreads by extension and quickly involves large areas of the body without any tendency to selective distribution. The patches are ill defined and diffuse—morphological features quite different from trichophytosis. Lack of itching and response to mercury ammoniate and staphylococcus vaccines supply additional differential features.

COMPLICATIONS OF TRICHOPHYTOSIS

The most common complications of trichophytosis are pyogenic infection and eczematization. The frequency of pyogenic infection is readily understood if we remember how itchy the lesions of trichophytosis are and how often the trichophytic vesicles are scratched open by the patient. In fact, the stormy development and acute distress caused by the pyogenic infection is often the very first symptom that prompts the patient to seek medical relief. Unfortunately it is too often that the attending practitioner fails to recognize that trichophytosis is the underlying primary condition and that the pyogenic infection is simply superimposed as an incidental feature.

All that is necessary for a correct interpretation of these cases is a study of the morphological details. One will have no trouble in detecting the characteristic extremely itchy, discrete, ruptured vesicles with epidermal collarette and scaly marginated edges.

ECZEMA AS A COMPLICATION OF TRICHOPHYTOSIS

The second important complication of trichophytosis is eczema. The intimate relationship of trichophytosis and eczema will be better understood if we recall that eczema is not a definite clinical entity but merely the most general protean type of skin reaction which can be brought about by any mechanical, chemical or bacterial irritant. Whether eczema is a secondary development, as a result of scratching, or can be caused primarily by epidermophyton fungus itself, is hard to determine. I believe that eczema is a secondary development due to scratching, rubbing, and other incidental irritating factors, such as hot weather, perspiration, etc., since quite often we see clearcut cases of vesicular and scaly trichophytosis without any evidence of secondary eczematization.

A fact of clinical importance is that only in the very acute stage of eczematoid ringworm does eczema dominate the clinical picture so strongly that the underlying trichophytosis can remain unnoticed. As soon as the acute stage is over the clinical characteristics of trichophytosis, such as vesicles with epidermic collarette and marginated scaly edges, will be found, if looked for.

LICHENIFICATION

In my experience lichenification is a rather rare complication of trichophytosis. This furnishes another differential point from eczema since the latter shows a constant tendency toward lichenification. The type of trichophytosis showing the greatest tendency towards lichenification is tinea cruris.

TREATMENT

The treatment of trichophytosis presents a serious and rather puzzling problem. In the face of the parasitic nature of the disease and the superficial localization of the fungus it would seem that trichophytosis should yield to local applications of antiseptic ointments promptly and lastingly. Yet clinical experience shows that while the improvement of clinical symptoms is rapidly obtainable the clinical cure is hard to obtain in many cases, and certain types, such as palmar and plantar scaly trichophytoses, are exceedingly stubborn and resistant to all kinds of treatment and show a strong tendency to recurrence.

In my experience, the types of trichophytosis most easily controlled are the intertriginous and vesicular of the hands and feet; next come the axillary and inguinal types, the most resistant being the palmar, plantar, and keratotic types. Two explanations suggest themselves to account for the frequent recurrences after an apparent clinical cure. The first is that it is hard to dislodge all the fungi cells from the deeper layers of the skin. The second assumes that the recurrences take place from the spores that had escaped destruction from local applications, or from articles of clothing or bedding that have escaped sterilization. I believe that the second factor is responsible for a great many more recurrences than the first.

Speaking of the treatment as such, it seems that all

agree on the general plan, i. e., to eradicate the fungi by persistent cleansing with soap and water and antiseptic applications. But the number of antizymotic drugs is so large that here the general agreement ends, and everybody chooses a drug of his personal preference. The most commonly used drugs are: salicylic acid, sulphur, iodine, chrysarobin, benzoic acid, and mercury. One of the most widely used ointments is one suggested by Whitfield of England:

Salicylic acid	2
Benzoic acid	4
Lanolin	ad 30

The combination suggested is a very rational and effective antizymotic application; yet I feel that in many cases, used blindly by the general practitioner, without proper consideration of the clinical stage of the disease and the type of case, it has proved ineffective and at times even harmful. Seven per cent. of salicylic acid and fourteen per cent. of benzoic in chronic keratotic cases may not be strong enough; on the other hand, in hyperacute vesicular and dyshidrotic cases it may prove highly irritating.

I believe that any set formulæ or fixed doses are inadvisable in a dermatosis like trichophytosis, which presents such a variety of clinical types and so many grades of intensity of inflammatory processes. Set formulæ should be given only with specific indications for a certain type or stage of trichophytosis. I believe that the individualization of dose is more important than the selection of a certain drug. For this reason I have no preference for any individual or combination of antizymotic drugs but use all of them singly or in combinations in various cases.

The general principle of dermatological therapeutics, to start from soothing applications and low doses of irritating drugs and gradually increase the strength of applications as the condition approaches the chronic and sluggish stage, can be taken as the basis of the therapeutic control of trichophytosis. After each acute reaction produced by active treatment the parts should be given a rest until the irritation subsides.

ULTRAVIOLET LIGHT

One of the latest and most valuable therapeutic agents in the treatment of trichophytosis is the ultraviolet light emitted by the water cooled quartz lamp. The ultraviolet light has been proved clinically and experimentally to be a powerful germicide and antizymotic. I consider it an ideal treatment, not only on account of its high antizymotic quotient and the perfect cleanliness and comfort of the treatment, but also because of the very important quality of even diffusion of the rays over the surface of the parts exposed to light.

This even diffusion of the rays over the surface allows a perfect and thorough sterilization of any part of the skin and a thorough destruction of individual mycelia and spores that may have escaped an application of antizymotic ointment.

The main limitation of the clinical efficiency of the ultraviolet light is its superficial action. For this reason I combine it as a rule with antizymotic ointments which penetrate to the deeper layers of the skin. The greatest value of ultraviolet light in trichophytosis is to be found in the final stages, before the patient is discharged as cured, as the final therapeutic measure to destroy the last lingering mycelia and spores and to prevent recurrences. In my opinion a strong blistering radiation is neither necessary nor desirable. A medium or mild radiation two or three times a week is most serviceable. Attention to the minutest details in handling cases of trichophytosis and personal supervision by the physician at regular intervals, as well as regularity and persistence on the part of the patient, are conditions *sine qua non* for successful results. Daily bathing in hot epsom salts solution before application of the ointment is very helpful in promoting the penetration of the drug into the deeper layers of the skin.

The x ray, advocated by some writers, has, in my opinion, a very limited field of usefulness in trichophytosis. The x ray has no bactericidal power, but it may be useful on account of its absorptive and alterative effects in eczematized, infiltrated and keratotic types.

PROGNOSIS

Speaking generally the prognosis is good. The large majority of cases clear up in two to four months; a good many require not less than six months, and a few exceptional cases, mostly of the squamous and keratotic types, may require a year and over.

SUMMARY

In conclusion, I wish to emphasize the following points:

1. Trichophytosis in all its various clinical types presents a serious problem because of its enormous prevalence and wide dissemination.
2. Clinical morphological data are of equal practical importance with bacteriological findings in the diagnosis of trichophytosis.
3. The various clinical types of trichophytosis present definite morphological characteristics which enable us to make clinical diagnosis in an overwhelming majority of cases.
4. A bacteriological positive diagnosis is conclusive, but the negative does not invalidate clinical diagnosis.
5. Dyshidrosis is a distinct clinical entity, though dyshidrotic skin is more susceptible to trichophytic infection than the normal.
6. Bacteriological diagnosis is desirable for completeness of the scientific records but it is not absolutely necessary for clinical purposes and can be dispensed with in a large majority of cases.
7. The differentiation between eczematoid ringworm and dyshidrosis and eczema can be made on clinical data alone in a majority of the cases.
8. Treatment of trichophytosis should be individualized according to the clinical type and stage of individual cases.
9. Proper doses of an antizymotic application is more important than the selection of a certain drug.
10. Ultraviolet light is an important addition to our armamentarium in the clinical control of trichophytosis.

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Coffee and Tea Drinking Among Children

The Results of a Questionnaire to Medical Specialists

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INTRODUCTION

The medical profession has long disapproved of the use of tea and coffee by children, and hygienists are constantly pointing out the dangers of these beverages for the young. It is nevertheless a fact that great numbers of American children are addicted to the tea and coffee habit. Numerous surveys of school children and children of preschool age have shown this to be true.

Though much information on the subject may be found in the published reports of investigations into the dietary habits of children, yet it seemed worth while to go directly to pediatrists and such other specialists as possess firsthand knowledge in matters of child hygiene and question them on the prevalence of the tea and coffee habit among children, and especially to learn from them whether educational measures against the habit are in order, and whether tea and coffee, or any other hot drinks, are allowable or necessary for children. Such information was sought by means of the questionnaire. Questions along the lines described were prepared and sent by letter to, 1, all American pediatrists and, 2, to a select group of other persons who are in positions to have dependable knowledge on the subject.

Before entering upon the discussion of the questionnaire and the results obtained from it, it is appropriate to outline briefly the results of other investigations that throw light upon the extent of the use of caffeine containing drinks by minors. The prevalence of tea and coffee drinking among children is amazing to one who is unaware of the facts in the case.

The United States Public Health Service in 1916 made an investigation (1) of rural school sanitation in Porter County, Indiana. This study also included an inquiry into the diet of the school children. It was shown that 1,277 children, or fifty-seven per cent. of the number examined, used coffee for breakfast. Incidentally, only fifteen per cent. of the children questioned reported that they had milk for breakfast. The report mentions further that the breakfasts of a number of children were deficient and that coffee or tea was a prominent constituent of such meals. At Gary, Indiana, in 1922 the Children's Bureau of the United States Department of Labor (2) found that, of the several thousand children of preschool age which were studied by the Bureau, over two thirds had coffee regularly, and that forty per cent. had it more than twice a day. Of children of foreign born parentage, over ninety per cent. drank coffee. Seventy-five per cent. of the children of Polish parentage used coffee two or more times a day.

Dr. George T. Palmer, director of research of the American Child Health Association, has recently (1924) reported (3) the results of a survey conducted by the association in eighty-six cities of the United States, whose populations lie between forty thousand and seventy thousand. The survey covered approximately thirty-five thousand fifth grade school children, whose average age was eleven years. Thirty-nine per cent. of these children drank one or more cups of coffee a day and six per cent. drank more than two cups. In the published report of this investigation, Dr. Palmer says that coffee and tea interfere with milk drinking. According to him, "The child that drinks two or more cups of coffee consumes less than a quarter of a pint of milk." The conditions uncovered by the American Child Health Association are without doubt representative of those prevailing throughout the whole United States and indicate the seriousness of a widespread habit that is rightly condemned by child specialists and child hygienists everywhere.

Other investigations also have thrown light on the extent of the tea and coffee habit among children. The United States Public Health Service in 1919-1920, in the course of a study (4) of 4,076 children living in eighteen cities in Missouri, discovered that 17.4 per cent. of the children drank tea or coffee, and that of 350 children classified as undernourished thirty per cent. drank coffee. An investigation (1923-1924) of the nutrition of children at Hagerstown, Maryland, disclosed the following facts: Of 267 children attending nutrition clinics, 34.1 per cent. drank coffee daily, and 21.3 per cent. occasionally; 16.5 per cent. drank tea daily, and 22.5 occasionally. Of fifty preschool children, fourteen per cent. used coffee daily, and six per cent. occasionally; four per cent. drank tea daily, and fourteen per cent. occasionally (5). A survey of 15,000 school children in San Francisco revealed the fact that about fifty-six per cent. of them were coffee users (6). Some years ago C. K. Taylor (7), a psychologist, made a study of 464 school children with the intent of discovering the effect of coffee on their school work. Seventy-one per cent. of them were found to use coffee to the extent of one or more cups a day. Commenting on the influence of coffee upon the school activities of the children, this investigator states: "In all it might be said that there were lower and lower grades for lessons as the amount of coffee taken each day increased. For instance, those drinking four or more cups per day averaged 63.8 for their lessons, a very great difference from the 73.4 of these drinking no coffee."

These data are sufficient to demonstrate that no insignificant proportion of our children are addicted to a habit that is distinctly harmful and of no benefit whatever, according to medical testimony. The tendency of coffee and tea to crowd out milk in the diet of children has been referred to. This result alone should be sufficient to ban their use by the young. As the result of an extensive investigation of the use of milk among a large number (7,738) of children, Miss Bernice C. Reaney (8) recently found that 38.5 per cent. of the children were coffee drink-

ers and that fifty-eight per cent. of those who used coffee did not drink milk. These figures show the effect that coffee has in displacing milk in the diet of the child. But it is to be remembered that physicians, almost without exception, hold coffee *per se* to be harmful for children because of its injurious effect upon the nervous system.

QUESTIONNAIRE TO PEDIATRISTS

Obviously, if reliable information relating to the diet of children is sought, one turns to the child specialists. It seemed highly desirable to obtain the opinions of a large number of such specialists regarding the status of coffee and tea and other hot drinks as beverages for children and regarding the desirability of renewed efforts in pointing out the harmfulness of such an uncalledfor stimulant as caffeine in the young. For this purpose, a questionnaire was prepared and sent to all members of the national and sectional pediatric societies of the United States. The total membership of these societies is 621.

The questions asked and the analysis and discussion of the answers received will be given in following sections.

Of the 621 questionnaires sent out, 292, or forty-seven per cent. of the total, were answered. As almost one half of the pediatrists responded to the questionnaire, their opinions as expressed by their answers may be considered representative to a fairly accurate degree of the views of American child specialists. This assumption is unquestionably justified in the case where answers to a question are almost unanimously the same. About three fourths of the returns were signed.

Question No. 1: Extent of Coffee Drinking Among Children. Have you observed in your community any considerable proportion of mothers who permit their children to have tea or coffee?

One hundred and eleven physicians, or thirty-eight per cent. of the number who made returns, reported that they had observed no considerable proportion of children using coffee or tea in their communities. Seventy-four, or twenty-five per cent., said that coffee and tea drinking by children was quite common among the working classes, the ignorant, and foreigners. Twenty mentioned that coffee and tea were used only slightly by children in their respective communities. A number of physicians, who evidently had given the matter of the tea and coffee habit of children more than passing attention, gave estimates of the extent to which, in their opinion, the habit prevails. It is of interest to note that such estimates indicate that fifty per cent. or more of children in general are addicts. These data are in concordance with the findings of the surveys previously mentioned. Of the few doctors who commented upon the increase or decrease of coffee and tea drinking by children, the majority believed that the habit was waning. As only a few discussed this matter, no safe conclusions can be drawn concerning it.

The replies to question No. 1 indicate a considerable divergence of opinion among pediatrics regarding the extent of the coffee and tea habit among children. This state of affairs is rather remarkable in view of the fact that statistical studies have uniformly shown that rather large percentages of American children, especially children of school age, drink one or more cups of coffee or tea daily. It is probably true that child specialists, serving a restricted group of wealthy patrons, do not come in contact with the socalled lower classes and are therefore not well informed regarding the dietary habits common among these classes. The results of a questionnaire to public health officials and public welfare workers, which will be discussed later, agree better with the findings of the surveys mentioned in the introduction with respect to the extent of the tea and coffee habit among children than do the opinions expressed in the answers of the pediatrists.

Question No. 2: Are Educational Measures Called For? If so, do you consider the practice of sufficient extent to warrant special educational measures?

Over fifty per cent. of the answers to the second question were favorable to the proposition that special educational measures against the use of tea and coffee by children are warranted. A few physicians (eight) held that sufficient steps along this line are being taken at the present time, and still others (eleven) believed that instruction of this sort should be left in the hands of existing agencies. A considerable number (thirty-seven) did not answer this question. It is suggestive of the disapproval with which child specialists regard the use of such stimulants as tea and coffee by children that, though a large proportion of those who answered the questionnaire have reported that they have not observed any considerable number of children drinking tea and coffee in their communities, over one half of those who answered question No. 2 are in favor of educational measures against the use of these beverages by children.

Question No. 3: Essentiality of a Hot Drink for Children. Do you believe that a hot beverage is essential in the diet of school children during the winter months?

Less than one fourth of the physicians who answered question No. 3 are of the opinion that a hot drink is essential to the diet of children. Over one hundred stated, however, that a hot drink or hot liquid foods are desirable for children and many of them mentioned that such hot liquids as hot milk, cocoa, chocolate and soups are advantageous to children.

Question No. 4: Permissibility of Tea and Coffee for Children. Do you believe that tea or coffee should be allowed in the diet of children?

Pediatrists who responded to the questionnaire were practically unanimously opposed to the regular use of tea and coffee by children. Only one physician answered this question unconditionally in the affirmative. A number held, however, that the beverages have some medicinal and therapeutic value. Twelve mentioned that weak tea or coffee may sometimes be employed in the treatment of ill or convalescing children. A little coffee or tea as flavor for milk was also referred to. Nine doctors objected to the use of tea and coffee only by children under the age of adolescence. Three were of the opinion that weak tea and coffee are harmless for children.

THE QUESTIONNAIRE TO CHILD HYGIENISTS, PUBLIC HEALTH OFFICIALS, CHILD WELFARE WORKERS, AND EDITORS OF MEDICAL JOURNALS

A limited number (fifty-four) of the questionnaires forwarded to pediatrists was later sent to cer-

tain other specialists who were presumed to be in positions that would afford unusual opportunities for observation on the dietary habits of large numbers of children. In this group were public health officials, child welfare workers, child hygienists, and editors of medical periodicals. Of the fifty-four questionnaires sent out, twenty-four, or forty-four per-cent., were executed and returned. The information obtained from these returns did not vary greatly in nature from that gained through the answers to the questionnaires returned by pediatrists, except as to extent of the tea and coffee habit among children. The recipients of the second questionnaire apparently are better informed on the prevalence of tea and coffee drinking by children than are pediatrists. This is indicated by the better agreement of the answers of the former with statistical studies on the dietary habits of large groups of children.

DISCUSSION

The discussion of the answers to the questionnaire returned by specialists in child hygiene and in child welfare is given below.

Question No. 1.—Twelve persons indicated that they had observed considerable numbers of children using coffee and tea; five indicated that the habit was not prevalent in their opinion. Two stated that the drinks were used quite commonly by the children of lower classes, but to a less extent by children of the educated classes. One hygienist believed that only a few children use tea and coffee, and another remarked that the habit is on the decrease. One return gave valuable statistical data on the subject. These data were in close agreement with published information. Two specialists did not answer this question.

Question No. 2.—The majority of the persons who answered question No. 2 favored educational measures against tea and coffee drinking by children; only six indicated that they felt that steps in this direction were unnecessary. One stated that educational measures would be justified, provided the instruction could reach the classes that needed it. One official in the United States Public Health Service expressed the belief that the practice of tea and coffee taking by children was on the decline. Three persons who made returns did not answer this question.

Question No. 3.—Eight unqualified answers to question No. 3 were in the affirmative; seven were in the negative. Six persons were of the opinion that a hot drink was desirable or beneficial for children, some stated that hot water, cocoa, hot milk, etc., were of value in the child's diet. One said that a hot drink was essential whenever there were no other hot foods available. In one return the question was not answered. The answers received to this question indicate that the majority look with favor upon a hot drink or hot liquid foods for children, but that only a smaller proportion believe that such drinks are essential for children.

Question No. 4.—All answers (twenty-four in number) to question No. 4 were in the negative. One physician of prominence was not convinced that tea and coffee had been proved harmful for children, yet he was inclined to play safe and prohibit these beverages for minors. Several pointed out in their answers to this question that tea and coffee minimized the use of more nutritious beverages.

Here again we have evidence of the practically universal opposition by those in positions of authority in matters of child hygiene to the practice of allowing tea or coffee as a constant item of the diet of children.

CONCLUSIONS

Despite the fact that a considerable proportion (thirty-eight per cent.) of the pediatrists who responded to the questionnaire stated that they had not observed any considerable number of children drinking tea and coffee in their respective communities, those who had given the matter special study, as well as a number of child hygienists and public health workers, all reported finding an astonishingly large percentage of children to be coffee addicts. These observations agree with those of numerous reports of studies of the diets of school children.

The majority of all those who answered the questionnaire are of the opinion that educational measures against the practice of tea and coffee drinking by children are desirable. A not inconsiderable number expressed some doubt as to whether instruction would be effective in reaching the classes that need it most.[1] Many pediatrists who reported that they were unaware of the use of tea or coffee by any considerable number of children in their communities were nevertheless disposed to look with favor upon a special campaign against the habit of tea and coffee drinking among children.

On the basis of the results of this questionnaire, it appears that a hot drink, even during the winter months, is not considered strictly essential to the diet of children by the majority of child specialists and child hygienists. But many hold, however, that hot drinks and hot liquid foods, such as hot milk, cocoa and soups, are often beneficial and desirable. Some pointed out that such hot liquids are especially called for when the child is compelled to take a cold meal.

A practically unanimous opposition to the allowing of beverages containing caffeine to children was found. This is not at all surprising, because the medical profession has for years put itself on record against such a misuse of our most common stimulant. The replacement of more nutritious beverages by coffee or tea was often referred to as a reason against its use. Undoubtedly coffee and tea beverages have no standing whatsoever among those competent to pass upon the dietary of the young.

In all, the findings of this questionnaire confirm the results of other surveys covering the use of stimulants by children. A large proportion of our children are addicted to a habit which is not only of no benefit to them and which interferes with their consuming an adequate amount of milk, but which also is of distinct harm to them, according to prevailing medical opinion.

[1]It is of interest to note in this connection that an unpublished report of an effort to reduce coffee drinking by school children in San Francisco states that a three months campaign (March 1 to June 1, 1923) against coffee resulted in a decrease of from 52.2 per cent. to 22.1 per cent. of children using coffee. These children attended twelve different schools and were 7,390 in number. In twelve other San Francisco schools (8189 children) which were not included in the campaign, 60.5 per cent. of the children were found to be constant users of coffee during the same period. The second set of schools was essentially comparable to the first in all respects. (Personal communication from Prof. A. A. D'Ancona, Deputy Superintendent of Schools, San Francisco, Cal.)

The author's references will appear in his reprints.

Instruments, Apparatus, and Clinical Notes

Oral Method of Cholecystography with Tetraiodophenolphthalein

Preliminary Report

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Since Graham and Cole (1) introduced the technic of röntgen visualization of the gallbladder by means of radiopaque salts, some further experimental and clinical studies have been published by Carman and Counsellor (2), Whitaker and Milliken (3), and others. Of the various halogenated tetraphenolphthalein compounds that have been used, it has been found that sodium tetraiodophenolphthalein is best, both for the oral and intravenous routes. A smaller dose of this dye is required, the reactions are uncommon, and when they do occur are mild, and the results are satisfactory. Whitaker, Milliken, and Vogt (4) were the first to give this dye orally, but Menees and Robinson (5) used tetrabromphenolphthalein by mouth before them.

In our work in the hospital we have used sodium tetraiodophenolphthalein in enteric coated capsules of five grains each, employing forty grains for each patient. Both the keratin coated and salol coated capsules have been utilized, and no difference in results has been noted.

To get a clearer understanding of what is to follow let us review the course that the dye takes when given by mouth. Because of its coating the capsule is not affected by the gastric juice, but is dissolved in the intestine, where the dye is liberated and absorbed. Then it is carried by means of the portal vein to the liver, where it is removed from the blood by the hepatic cells. Then the dye is excreted into the bile and reaches the gallbladder by way of the hepatic and cystic ducts; and then reaches the intestine again by way of the cystic and common bile ducts. It may be inserted here that when the dye is given intravenously it reaches the liver by way of the systemic circulation, and then follows the same course as the orally administered dye. Because of the radiopacity of the dye, a shadow of the gallbladder is produced when dye stained bile is present there. From the presence or absence of the shadow of the gallbladder, and from its contour, we make our deductions. It must be remembered that in using the oral method the condition of the gastrointestinal tract must be considered, and also we must look for undissolved capsules in the small and large intestines. Of course, the state of health, if we may term it such, of the liver is to be considered in both the oral and intravenous routes.

In our consideration of the normal, or rather what at the present time is considered as normal shadows, we will assume that there is no pathology in either the gastrointestinal canal or in the liver. Our procedure with a patient is as follows: The evening before the examination at five o'clock, the patient is instructed to eat a plate of vegetable soup, a baked potato and butter, some bread and butter, and some tea with milk or lemon and sugar. This serves to empty the gallbladder. After this the patient is not to eat anything, although he is allowed to drink water freely. At nine o'clock the same evening he is to begin taking the capsules; taking two every fifteen minutes until eight have been taken. As stated above the capsules contain five grains each of the dye. Before retiring the patient takes an enema. It may be added that the need for the enema is probably not urgent, for it has been observed that without it, many cases give satisfactory results. But for the sake of uniformity in technic, this has been included in the instructions. Now at nine o'clock the next morning the patient reports for the first röntgen examination without having had any breakfast. What has happened during these twelve hours is digestion of the capsules and the absorption of the dye, then its excretion into the bile. So that we expect that the bile now present in the gallbladder is dye containing and will cast a shadow.

This observation, then, should reveal a regular pyriform shadow of the gallbladder, which appears as a uniform white shadow on the plate. This shadow is similar to that obtained from the barium filled stomach, but of course not as dense. After this examination the patient is not to eat anything for another four hours, at which time another plate is taken. This shadow of the gallbladder should be of equal or of larger size as that seen at the twelve hour interval. The patient now has his regular noonday meal and reports for another observation three to four hours later. At this time the gallbladder shadow should be smaller in size than at the other two periods, or else be entirely absent. The patient continues with his meals as usual now, and returns for another observation the next morning, which is thirty-six hours after ingestion of the capsules. This plate should show no shadow.

To recapitulate: The theoretically normal person should show a gallbladder shadow in the twelve hour observation, which is both uniform in outline, and of equal density throughout; in the sixteen hour plate the shadow should be of equal or greater size; in the nineteen or twenty hour plate the shadow should be smaller than either of the other two, or be entirely absent. In the thirty-six hour plate there should be no gallbladder shadow.

Thus far our series of cases numbers thirty-six. These are unselected; their ages range from twenty-one to fifty-five with an average age of forty; all but one are women; all of the women are married, with two exceptions; and all the married women have borne one or more children with the exception of

*From the Departments of Gastroenterology and Roentgenology, Bronx Hospital, New York. Read before the Bronx Hospital Clinical Society, January 11th, 1926.

Fig. 1.—First of a series of normal cystograms. Plate taken twelve hours after the administration of the dye. The arrows point to the filled gallbladder.

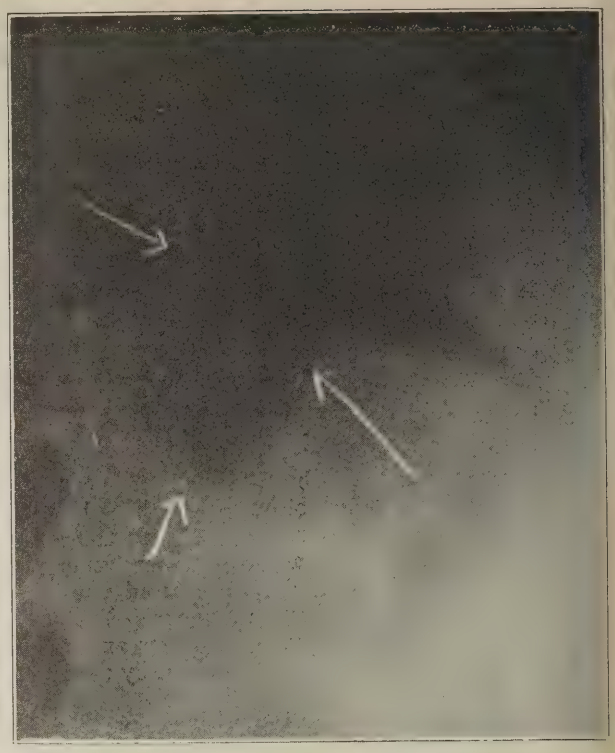

Fig. 2—Plate taken sixteen hours after the administration of the dye. The arrows point to the filled gallbladder. Note the increased size as compared to Fig. 1.

four. About half of them are obese, and all of them complain of gastrointestinal symptoms. None of them have any clinical evidence of liver disease which would contraindicate the use of the dye; and none of them have delayed gastric emptying which might interfere with the solution of the capsules. In no case is there any common duct obstruction which would interdict the administration of the dye. One of the cases has mucous colitis, but since the absorption of the dye probably does not take place to any extent in the colon, this condition cannot be said to interfere with the efficiency of the test. So taken all in all, this series should offer no obstacle to the successful demonstration of this method.

Nine cases, or twenty-five per cent., failed to give any shadow of the gallbladder. Of these, only one was clinically diagnosed as gallbladder disease, and in this case there were suspicious shadows of calculi in one of the plates. In these nine cases, four showed the presence of from one to six undissolved capsules; so that we are confronted with the question of whether or not enough of the dye was absorbed from the intestine to cast a satisfactory shadow. In this connection it is interesting to note that Oakman (6) took two normal gallbladders, each attached to its adjacent block of liver tissue, removed at autopsy, and tied off the cystic ducts. Then he radiographed them under a four inch water phantom, and obtained no shadow. He then injected one gram of aqueous solution of tetrabromphenolphthalein into one of them, and twenty-five hundredths of a gram into the other. Under similar conditions, he radiographed the gallbladders again. The first one showed a clear shadow, and the latter a shadow that was barely discernible. He ventures the statement that perhaps some cases need hardly more than one gram of absorbed dye to be visualized. Our experience has been that in one case in a fairly obese woman, good visualization of the gallbladder was obtained, when only three of the capsules, or only fifteen grains of the dye, were absorbed. But then we are using tetraiodophenolphthalein, and less of this dye is needed for satisfactory results, than of the bromine compound. So it remains to be determined by further study just how much dye is necessary to cast a shadow. Parenthetically it may be added that the amount of absorbed dye is meant.

Thirteen of the thirty-six cases, or thirty-six per cent., were definite clinical cases of gallbladder disease. Of this number five gave a normal series of shadows, one of which was operated upon, and stones were found. Of the other eight, three gave positive evidence of calculi, and this was proved by operation. One showed a displaced shadow of the gall bladder, that is the fundus seemed to be held up under the liver edge; which would indicate pericholecystic adhesions. Two showed suspicious shadows of calculi. Two gave evidence of cystic duct obstruction, or obstruction in the neck of the gallbladder, in that the gallbladder shadow persisted after the thirty-six hour examination.

Three cases which were not gallbladder disease clinically gave signs suggestive of cholecystic pathology; that is, the shadow persisted after the thirty-six hour observation. At this point it may be mentioned that the question of reabsorption of the dye from the intestine must be considered, with subsequent revisualization of the gallbladder, if we may term it such. The discovery that the oral route might be successfully employed was made during the rou-

FIG. 3.—Plate taken nineteen hours after the administration of the dye. The arrows point to the filled gallbladder. Note the diminution in size as compared to Figs 1 and 2.

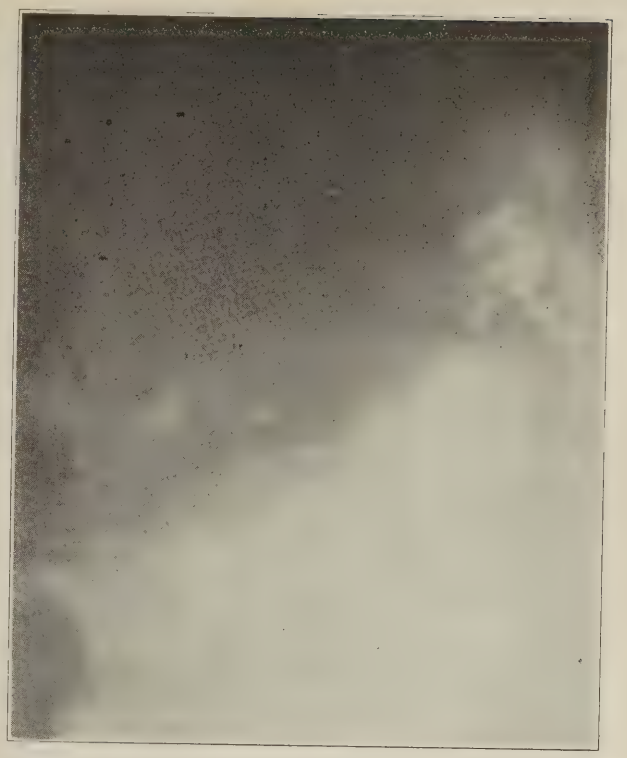

FIG. 4.—Plate taken thirty-six hours after the administration of the dye. Note the entire absence of a gallbladder shadow. Compare with FIG. 3.

tine gastrointestinal study of patients who were given the dye intravenously (7). It was noted that the gallbladder shadow which was absent twenty-four hours after the intravenous injection, reappeared in seventy-two hours. This was rightly ascribed to the reabsorption of the dye from the intestine after its excretion into the intestine by way of the bile. Therefore with a case of a persistently filled gallbladder this factor must be considered. But the answer probably will not come from a reading of the plates alone. A careful consideration of the clinical picture of the case, the signs of gallbladder disease obtained from a routine röntgen ray examination of the alimentary canal, will also have to be considered before a conclusion is drawn from the employment of the dye visualization of the gallbladder.

All of the other cases showed normal shadows. In a number of the cases the ileum, the cecum, the ascending, and sometimes the transverse colon were seen to be outlined by the dye. It is in cases of this kind where the question of reabsorption of the dye presents itself for consideration. Also the presence of undissolved capsules must be ascertained. Too, it is to be remembered that the plate takes in only the right half of the abdomen, or less, and that there may be both undissolved capsules and unabsorbed dye in the small intestine and the colon, which occupy the left half of the abdomen. This brings us to the necessity of emphasizing the importance of fluoroscoping each case before the plate is taken to determine, how many, if any, capsules remain undissolved; or if any dye stained intestinal coils can be identified. This has not been done in our series, but will be done hereafter.

In no case were we able to detect the gallbladder fluoroscopically in our cases which were fluoroscoped.

It has been noted that the liver shadow becomes more visible after the dye is taken, and less visible as the dye is excreted. This observation may or may not be of value, but it can be depended upon because the technic of taking the pictures does not vary. Of course, the sharper liver shadow is due to the presence of the dye in this organ. We have had no real reactions from the dye. Two patients complained of intense nausea, but nothing else. The intravenous route has not been employed in any of the cases. It is suggested that in doubtful cases the results should be checked up by giving the dye intravenously.

The question whether or not this method will increase the accuracy and frequency with which calculi are demonstrated, naturally arises. At this time it is not possible to answer this. But it is to be remembered that while without this test we depend upon a positive shadow of a calculus for a diagnosis, with the dye the presence of calculi are sometimes manifest by negative shadows. That is, the gallbladder is seen outlined with the dye stained bile, except in the portion occupied by the calculi. It is also well to keep in mind that the dye stained bile may overshadow an otherwise visible calculus, hence the advisability of taking a röntgengram before the dye is administered. Before the advent of the dye, a calculus which contained a sufficient amount of calcium only cast a shadow. The proposition now arises whether or not the amount of iodine present in the dye stained bile might not overshadow the calcium containing calculus which would otherwise be visible. This is another question which will have to be answered as more experience accumulates, and more patients who have had the dye-test have been

operated on. We had one case which showed a normal series of shadows, and which proved to be cholelithiasis upon operation, as mentioned above. It has been suggested that calculi which have rough surfaces will cause the dye stained bile to adhere to it, and thus an annular shadow will be produced.

As experience is gathered, we will learn what the normal gallbladder is, what its variations are, and what positions it may assume. That pericholecystitis may be diagnosed with accuracy is selfevident, if a distorted shadow is seen.

Reviewing the technic of the oral administration of the dye, we find that there are many drawbacks to its use. There is a great factor of uncertainty in the amount of dye that will reach the blood stream, and hence the bile. Then there is the intelligence of the patient to be considered in carrying out the instructions. And then there is the important matter of having the capsules in which the dye is placed, uniformly and entirely coated. The condition of the gastrointestinal tract must be considered, in order that we may be certain that there is no pathology present which would interfere with digestion and absorption of the dye. We must see that no liver disease is present, and that there is no obstruction in the common duct.

CONCLUSION

Withal we have a method that will prove more and more instructive, as the entire problem is better understood. There is no doubt that if we are able to visualize an organ, we can better tell what that organ can do or is doing. Probably, we are in the same state of uncertainty regarding what is and what is not a normal series of gallbladder shadows, as we were not so many years ago regarding the stomach. When that organ was first seen filled with an opaque salt, every variety of abnormality was read into perfectly normal radiographs. And it was only with the repeated application to the study of the various manifestations exhibited by gastric röntgengrams that we have arrived at the definite knowledge we now have of the stomach. So it will probably be with this method of gallbladder visualization.

That the oral method is and will be the method of choice over that of the intravenous route, there can be little doubt. The former is safe, it is an office procedure, there are no reactions of any moment, and it does not necessitate any real interruption in the usual routine of the patient's day. Its limitations are appreciated, but these will be erased as we learn more about it. Its simplicity recommends it. The intravenous route has yielded ninety-five per cent. positive diagnoses (7) in the hands of one observer, and should be employed in doubtful cases.

No discussion of the technical problems involved in the taking of the radiographs have been included, for it is out of place in an exposition of this kind.

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150 East 90th Street.

A Contribution to the Technic of Urography

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The collaboration of the x ray department of a hospital can be used with marked benefit in urography by immediate development of the films before the cystoscope or catheters are removed from the patient. In this way the urologist is able to look over the film and determine its value—whether the proper diagnostic data has been obtained—or—if this be lacking, the apparent error is easily observed and another exposure made under the proper conditions. The waiting time is hardly over six minutes and the information obtained invaluable. It is distinctly mortifying after cystoscoping a patient, catheterizing the ureter, injecting the contrast substance and making several exposures to find the next day that the urograms have been of no value and that the procedure must be repeated. This is often made impossible by the condition of the patient, or a refusal to undergo the examination again, or the danger of over exposure with the x ray.

The simple procedure of immediate development, and observation of the film by the urologist before removing the cystoscope from the patient, is a marked advance in urography.

In removing the contrast substance from the renal pelvis and ureter after a urogram much time is saved by lowering the injection receptacle below the level of the kidney and syphoning back the fluid rather than disconnecting from the catheter and allowing it to drip out.

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Remarkable Adhesions of the Large Intestine

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The following condition found by me recently, but only after death, seems nevertheless of enough surgical interest to warrant a note. It occurred in a strongly built middleaged male. The left lobe of the liver, unusually large, projected extensively downwards in front of the stomach. Indeed it reached as low in the abdomen as the right lobe, which was normal in size, and almost completely covered the stomach in front. Only adjoining its pyloric end was the stomach exposed below a deeply concave central portion of the lower edge of the liver formed by both lobes.

Its pyloric part, unusually attenuated (possibly a correlated variation), was continued into a duodenum whose terminal (fourth) part (ascending portion of pars inferior) was practically absent.

The duodenojejunal flexure (Fig. 1) lay in front of the left border of the aorta quite two inches below its usual (transpyloric) level. It still held contact, however, with the lower border of the pancreas whose body had been flattened out at the expense of the whole of its inferior surface.

Fig. 1.—A, duodenum; B, round ligament here in middle line; C, stomach; D, duodenojejunal flexure; F, transverse colon; G, descending colon; H, cecum; I, crest of ilium; J, border of great omentum; K, iliac colon; L, ileum (cut); M, pelvic colon; N, recti muscles, cut and reflected; O, pelvic brim; P, spine of ileum; Q, mesentery (cut); R, crest of ileum; T, ascending colon; U, space; V, cut wall of abdomen; W, jejunum (cut); X, great omentum; Y, right side of liver. The root of the mesentery is represented by a thick interrupted line. This drawing was made from a tracing and taken on a glass plate laid over the actual parts.

The cecum—of infantile type—lay inverted in a quite unusual position (the concavity of the splenic flexure). It occupied chiefly the left lumbar region. Covered in front by the great omentum, it was in contact with the left part of the transverse colon as well as with the descending and iliac colons, to all of which it adhered firmly.

These parts formed a loop, open downwards, almost completely encircling the cecum and holding it securely in position. The splenic flexure lay considerably below the normal level. The beginning of the colon as well as the terminal part of the ileum passed upwards to the cecum through the space left below between the limbs of this colic loop. Thus the colon descended from the cecum instead of ascending as normally. It then crossed the middle line over the first sacral segment to reach the front of the right common iliac artery. Here it turned upwards as a very narrow ascending part which crossed the iliac crest and came into contact with the right kidney.

Small intestine completely covered the cecum and colon up to this point, and also lay in a considerable space to the right of the ascending part which it completely separated from the lateral wall of the abdomen and right lobe of the liver. I have never before seen the ascending colon so completely buried behind the small gut and so completely separated by it from the lateral wall of the abdomen and from the liver. Posterior gastrojejunostomy would have been impracticable for the transverse colon lay in contact with, and fused to, the posterior abdominal wall.

Fig. 2.—A, root of mesentery; B, terminal part of ileum, adherent portion; C, duodenum; D, mesentery; E, right (descending) limb of pelvic colon; F, ileum ("free" part); G, cecum. Adult male. The pelvic colon forms a large intraabdominal loop fixed permanently in this position by adhesions. The mesentery, indeed, has fused down to the right (descending) limb of the loop, whose summit touches the duodenum, as is quite common in the fetus. Thus the mesentery arises from the duodenum as normally, but below this from the pelvic colon, and not at all from the posterior parietal peritoneum. The ileum in its terminal few inches, however, is bound down directly to the peritoneum over the right psoas. The nature of these fusions is suggestive of the operation during fetal life of the genitomesenteric fold of peritoneum described by me. This, provided it is not itself obliterated by the pelvic colon (see e.g. *Proceedings of the Royal Society of Medicine*, London, 1914, Vol. VII, may sometimes pull the mesentery down over this preceding even cecal descent) in addition to fixing the terminal part of the ileum. The fold may then itself become fully obliterated. I have noted a similar condition in two other adults. The strip of white paper extends between the ascending and pelvic colons.

Like the great omentum it had no relation to the anterior abdominal wall for both were completely concealed from view behind coils of small intestine.

Normally, *"des anses intestinales couvrent quelquefois"* the anterior face of the transverse colon.

It adhered to the second part of the duodenum, commencement of the jejunum and head of the pancreas. To the left of this its mesentery was fused down over the duodenojejunal flexure, left psoas, kidney and the upper part of the cecum to which, as already noted, the transverse colon also adhered directly.

Thus it was completely deprived of a mesentery, a condition I have never seen before (in over one thousand adult bodies examined). Moreover, the transverse colon adhered to the mesentery of the small intestine along the whole length of the abnormally placed root (thick interrupted line in illustration). The (ascending) colon which passed from the cecum across the middle line also adhered to the right (here inferior) surface of the mesentery along the line of its root. The left part of the mesentery was thus wedged in between, and adhered to, two usually completely separated parts of the large intestine, both close together and securely fixed to the posterior wall of the abdomen.

DEVELOPMENTAL FUSIONS

I have shown that fixation combined with pressure are the two essential causes in the formation of developmental peritoneal adhesions. The unusual fixation of the mesentery and cecum between parts of the large intestine was obvious in this case.

I have now seen examples in the adult of (developmental) fusions of the mesentery to all the different parts of the colon (ascending, transverse, descending (at its lower part) iliac and pelvic). In the case of the pelvic colon I have seen, e. g., a loop which apparently had retained its fetal position in the abdominal cavity through the descent of the mesentery and its fusion down over it. Indeed, below the duodenum the mesentery arose entirely from the right limb of the pelvic colon and not at all from the posterior abdominal wall. I have several photographs showing these conditions which must be of interest in connection with operations such as freeing the colon from adhesions, inguinal colotomy and excision of the rectum. In other papers I have dealt with the

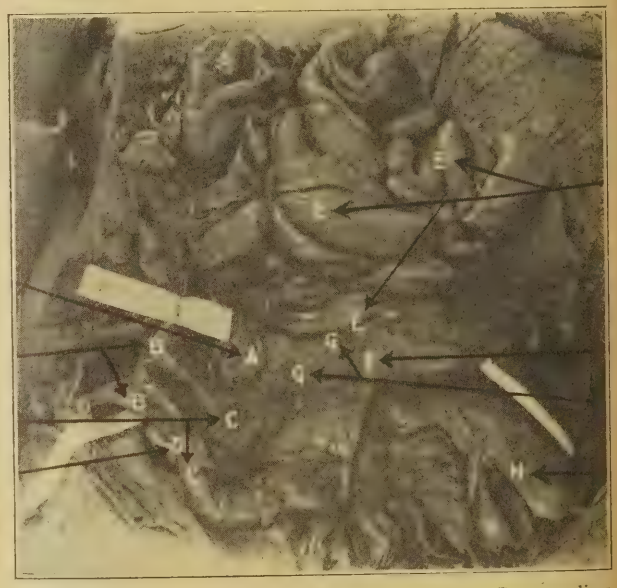

Fig. 3.—A, terminal part of ileum, pulled upward; B, appendices epiploicæ; C, pelvic colon; D, small part of cecum; E, small intestine pulled upward; F, colon crossing bifurcation of aorta; G, mesentery; H, left psoas major muscle. I have shown that the lower part of the mesentery of the terminal intestine (Jonnesco)—the part of the large gut between the splenic flexure and the anus, has a tendency in the fetus to rotate toward the right, so that its originally right (instead of its left) surface becomes posterior. This may result in the terminal intestine crossing in front of the aorta to reach the right iliac fossa, and the inferior mesenteric artery correspondingly shifts its origin on the aorta toward the right. When the root of the mesentery descends, with the formation of the ascending colon, to become oblique, it is thus brought up against the colon in this unusual position, and may fuse to or over it, especially if the colon has already become fixed. This condition is shown in the photograph of an adult male given above (I have seen it still better marked). The colon here crosses the bifurcation of the aorta and forms a loop, pelvic colon, in the right iliac fossa. This loop, which covers the cecum, is bound to the parietal peritoneum by strong appendices epiploicæ. The lower strip of white paper on the right side is insinuated under one, and another holds the summit of the loop to the right side of the abdomen. The left end of the upper strip of white paper on the right side rests on the small intestine to show the mesentery arising very largely from the upper limb of the loop of pelvic colon and from the colon just above this. In front of the ascending colon was found a wellmarked membrane formed by strong appendices epiploicæ. It is noteworthy that I found the cecum in the fetus generally adherent (to the parietal peritoneum) before its descent. This does not necessarily prevent, although it may hinder, its ultimate migration to the right iliac fossa. The ascending colon may in some such cases have a mesentery dragged out in this descent. In other rarer cases, the primitive mesocolon may of course persist.

position and form of the pelvic colon and its importance in producing in the fetus adhesions of parts against which it may press. (See, e. g., *Journal of Anatomy* of Great Britain, 1911.) These adhesions, perhaps, may be termed accidental peritoneal fusions—common enough, but unthought of, as it were, toward the support of viscera in the assumption of the erect attitude, yet no doubt of some surgical interest as I have tried to show.

In an adult I found recently a loop of pelvic colon, more than two feet in length along its convex border, lying, along with a short loop of small intestine, in the sac of an oblique leftsided inguinal hernia. As far as I know there is not another case like this on record.

Instead of going obliquely downwards and to the right, the root of the mesentery descended in the middle line in front of the aorta, and then curved abruptly to the left of the ileocecal junction. It formed a curve concave upwards. Thus the usually left and lower surface of the mesentery was in this case the left and upper; and the loop of transverse colon fitted exactly into this concavity formed by the mesentery to which it adhered. The ileocolic artery (which forms a relatively rigid bar in the fetus determining the extent of normal fusion of the mesentery) lay along the line of the root as it does primitively. It arose from the left (instead of right) side of the superior mesenteric artery as this crossed in front of the duodenum. All these conditions were undoubtedly largely due to the unusual elongation of the ascending colon, and to the persistence of an unusual portion of the left lobe of the liver.

In the course of development the root of the mesentery of the small intestine, at first horizontal, becomes oblique along with (or before in some cases) the descent of the cecum. In its passage to the left of the middle line the ascending colon naturally elongated along the line of the root, and was thus brought into firm contact with and adhered to the mesentery.

The case seems interesting, then, on account of these remarkable adhesions, and the concealed and completely buried positions of normally exposed parts —transverse colon, cecum, ascending colon, great omentum. Before this I have never seen a cecum reach into the left lumbar region.[1] Apparently also it had not at first descended to the pelvic diaphragm before turning upwards to become inverted, but had taken a short cut across the first sacral segment.

The various adhesions of the parts, including the duodenojejunal flexure, were thus practically all on the left side of the middle line. In addition to what I have indicated doubtless they were determined in part by the large size of the left lobe of the liver and its unusual projection downwards. I regard them all as entirely developmental in origin. There was no evidence to contradict this.

[1]Previously I once found the cecum in the left iliac fossa. There are thirty-six observations *"de hernic inguinale gauche* (Pujol, 1896)" The cecum *"pent faire de toute les hernies ombilicale, crurale, inguinale, et même du côté gauche."*

The Treatment and Prognosis of Intraperitoneal Adhesions

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The treatment of adhesions resolves itself into preventive and curative types of therapy. These may be further divided into preoperative, operative and postoperative. Preoperative therapy stresses those methods which will secure a good postoperative recovery. In general, conditions which maintain the patient's normal processes of life will give the best results. Early operation in such infections as require surgical treatment cannot be too strongly recommended. If the preparation warrants sufficient delay the elimination of foci of infection grants respite from a possibility of a spread of inflammatory reactions from these sources. There seems to be an opinion prevalent that a highly activated alimentary tract both before and after operation will prevent the formation of cohesions. This view is misguided, however, since any such stimulus produces hyperemia with its concomitant regenerative activity and increased tendency to cicatricial production.

Since the pathogenesis of adhesions is based upon the same principles as healing, or the formation of other cicatrices, a surgical procedure performed with this in view will do much to avoid the formation of adhesions. The correct incision is one which is placed so as to interfere as little as possible with the blood and nerve supply of the parts, making it only of such size as to accomplish the purpose of the operation and progressing as expeditiously as compatible with thorough and careful work. Such an incision properly repaired using the Czerny-Lembert suture coapting a broad peritoneal surface is the best safeguard against hernia, as also against cohesions. The use of dry sponges or gauze on the peritoneum is similar to a curet: the delicate endothelial surface is roughly torn. Forcible retraction is also very damaging to tissues. It is perhaps better to use a self retaining retraction —of which R. E. Farr's represents a favorable type. During manipulation, very gentle handling of tissues with avoidance of drying or contact with chemicals —such as iodine painted skin—are attentions which render the wound much more responsive to rapid healing.

The experiments of Walthard (1) clearly demonstrate the action of drying as an endothelial injury. So on opening the abdomen, careful walling off of all areas except that which represents the field of endeavor protects the peritoneum from unnecessary exposure. Moist hot sponges are best for this purpose as well as for hemostasis. Strict asepsis, with complete hemostasis and closure of all raw areas by contiguous or transplant grafts of peritoneum or omentum constitute important steps in good surgical technic. In the use of the cautery a thorough application leaves a thick eschar of necrosed tissue under which

healing takes place with no tendency toward cicatricial attachments. A mild application leaves a raw surface insufficiently covered over with necrosis to prevent or allay this tendency. Before closing, a careful arrangement of the intestinal loops within the abdomen makes any cohesions which do form less likely to cause clinical symptoms.

Drains give rise to thick dense adhesions. As a rule, they are inserted in the presence of infection and peritonitis produces such a violent regenerative reaction as to create by itself extremely tenacious bands of scar tissue. When this is further aggravated by the presence of a foreign body there is added the final etiological factor in the production of the densest of eschar formation. The study to which drains have been subjected leaves no longer an experiment this important aid in surgery. It is recognized that gauze does not serve for drainage purposes, either alone or in conjunction with a rubber tube. A thick, heavy rubber tube is equally injurious. Thin strips of soft rubber, Penrose drains, or the Gibson tampon pack in severe infection, meet all the requirements for drainage of any field. The proper position for drains is against the abdominal parietes not into the loops of viscera. This is one of the chief advantages of the Gibson tampon drain. Postural drainage is worthy of thought following a septic operation; R. C. Coffey (2) has well demonstrated the value of turning the patient on the right side and from that position elevating him to the Fowler position, dropping all the débris into the pelvis.

The growth of adhesions is dependent upon the same principles which control the healing of a wound, by primary or secondary intention. For this reason, any effort to delay the formation of adhesions will in like manner delay the healing of the wound. Thiosinamine, phosphorus, peptone and fibrolysin are misdirected efforts to accomplish this purpose. Any introduction into the abdomen of such substances as oils, unguents, viable or nonviable grafts with the possible exception of autogenous grafts are alike all foreign substances and stimulate the peritoneum through direct trauma, chemical or physical stimulus to a greater reactive effort with the resulting thicker, denser, firmer entanglements of organs in a network of massive scar tissue.

The use of the omentum as an autogenous graft in closing upon raw areas has been experimentally introduced by Senn (3) and is highly recommended by Freeman (4). Where there is tension it is preferable to use fascia lata. Both of these structures act as hemostats and do not cause infection. A sufficient number of catgut sutures must hold the transplant in place to guard against its shifting. It should not pucker and should project over the edges of the raw surface; yet using no more tissue than necessary. The excision from the omentum is best made away from the large vessels. The chief objections to this procedure are the occasional formation of multiple foci of hepatic necrosis and the causation of gastric or duodenal hemorrhages. These complications are believed to be due to embolism arising from thrombosis of the omental vessels. They are very unusual complications and occur more frequently in men than in women. Still other objections are the loss of a useful organ and the production of a raw omental edge. The objections are overlooked, however, when one is dealing with an abdomen which possesses tremendous capacity to form adhesions in an effort—often successful—to prevent their reformation. The practice of planting the cecum or sigmoid or uterus into the pelvic regions to cover raw areas needs no detailed consideration as they are recognized important procedures under certain circumstances. Richardson's (1) technic in covering intestinal denudations by the mesentery or part of the mesentery of the denuded loop is worthy of adoption.

The best possible preventive of adhesions is good surgical technic, careful operative work with thorough closure of raw areas under aseptic conditions, leaving the patient as nearly undisturbed physiologically by the operation as can be accomplished.

Postoperative enteroclysis of five per cent. glucose or saline solutions, heat (especially dry—in the form of a light) applied over the wound, careful regulation of diet—being slow to introduce any foods which may cause any intestinal disturbance, are important early measures. Later, massage, exercise and belts may be recommended in individual cases. An excellent method of massage is the rolling of a small bowling ball around the abdomen clockwise. Administration of telatherm is very beneficial in some of these patients.

In cases which represent ill results of previous operations, where one opens up an abdomen full of adhesions, it is necessary to know before the celiotomy what part of the peritoneal cavity requires attention. The same surgical precautions must be remembered with the addition that adhesions which are not causing trouble should be left alone. Often the separation of attachments not producing clinical symptoms results in their reforming in greater number and more serious fashion with sometimes evidence of critical disease. Therefore, only such adhesions as are causing the immediate trouble should be disturbed. Special care is taken to make a correct and complete closure bearing in mind the surgical principles above mentioned. Following operation postural treatment is important as an adjunct to the prophylactic measures previously considered. At the time of operation changing the position of the patient will demonstrate more clearly the cohesions which affect the individual's health. Injecting oxygen into the abdominal cavity keeps the wall of the abdomen lifted away from the viscera while healing of each area progresses. The benefits to be derived from hypermotivation of the alimentary tract or interference with coagulation of exudations are very much questioned. There can be nothing gained by these measures except to delay the normal convalescence of the patient and even bring about other complications.

Obstruction from adhesions requires immediate surgical procedures. In septic obstruction, it is wise to perform ileostomy. It is these cases which represent the most severe picture of this type of pathology. Obstructions will frequently recur unless one can prepare the abdomen by prophylactic surgery for the return of organs to their normal positions leaving no possibility for return of this dreaded complication.

As a general rule, the patient may become adapted to the new adhesive supports within the abdomen. It is only a small percentage of patients who really complain sufficiently to attract the serious attention of

the attending surgeon: and careful physiotherapy, hydrotherapy and medications give relief to this number which constitutes probably five per cent. of the total operated cases. The patients who remain intractable to the very best of care fortunately are few indeed. There are no data as to their number in the available literature though they probably do not reach a figure higher than 0.01 per cent. of all those who complain of adhesions.

The treatment of adhesions, then, is first of all prevention by thorough, rapid, aseptic surgery in a warm room with warm moist protection of the viscera and careful hemostasis, complete closures with pneumoperitoneum, postural rest, diet, massage, exercises and abdominal belts. The prognosis in these cases is for the most part good, with the exception of a very small percentage which remain intractable to any form of treatment with recurring intestinal obstruction.

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Popular Fallacies Concerning Hemorrhoids

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During the course of a practice devoted entirely to rectocolonic diseases, I have frequently encountered certain fallacious opinions concerning the nature and characteristics of hemorrhoids and other fallacies concerning the methods now in vogue for their treatment. They are stated here as fallacies in the hope that others may not be led in error by them. Thus it is my opinion that it is erroneous to believe:

1. That extensive stretching of the sphincter muscles is a necessary preliminary to a hemorrhoid operation. The ordinary manipulation incident to grasping the hemorrhoids and bringing them down through the anal orifice is quite sufficient to induce dilatation of the sphincters to the extent compatible with their welfare. When deliberate dilatation is performed, particularly if done with instruments, the stretching of these muscles often resolves itself into a tearing of the sphincteric fibres.

2. That opium suppositories have any value in the palliation of the pain and soreness associated with hemorrhoids. Attempts to introduce the suppositories may readily traumatize the hemorrhoids far more than the opium could possibly sooth them; moreover, opium has no local anesthetic action whatsoever. Whatever opium is absorbed is certain to induce a constipation which in itself aggravates the hemorrhoidal condition.

3. That bleeding from hemorrhoids is beneficial. This opinion is frequently expressed by the laity, occasionally by physicians. In persons afflicted with high blood pressure, it is conceivable that the loss of blood may have a slight temporary effect upon the blood pressure but neither in this nor in any other circumstance can the bleeding be construed as being beneficial.

4. That the injection method of treating simple internal hemorrhoids is unethical. That method cannot be termed unethical because of the standing of some of those who use it. There are more ethical than unethical physicians using this method but because of its early association with irregulars, the charge that it is unethical is frequently made. It would be just as illogical to assert that local anesthesia is unethical because that, too, is used by the irregular practitioner.

5. That the injection method of treating hemorrhoids is applicable to all forms of hemorrhoids. Experience has shown that this method is only applicable to one type of hemorrhoid and that is to simple, uncomplicated internal hemorrhoids.

6. That hemorrhoids are neoplasms. This statement is frequently found in textbooks on rectal diseases. It is absolutely erroneous and is merely in keeping with the general lack of exact knowledge of pathological conditions on the subject of rectal diseases. The process of hemorrhoid formation is a degenerative lesion of the veins and is not a neoplasm.

7. That hemorrhoids are peculiar pathological conditions similar to no other condition of disease. The process of hemorrhoid formation is that of varicosity and is absolutely identical in principle with that of varicocele formation and varicose veins of the leg.

8. That the average set of statistics concerning the frequency of hemorrhoids in relation to sex, age and occupation are worth anything. The usual statistics are obtained under such special circumstances and with such variable factors that they are scarcely of any value. Thus, a gynecologist thinks hemorrhoids are more frequent in females; the general surgeon thinks that they are more frequent in males; an industrial surgeon believes they are more prevalent among the working classes; a general practitioner that they are found in all classes. It is a matter of circumstances altering cases.

9. That hemorrhoids are harmless conditions and of no clinical importance. The readiness with which suppositories and salves are recommended and used in this condition unfortunately support this view.

10. That it is not necessary to examine a patient who says he has "piles." There have been many cases of cancer of the rectum treated with suppositories because of this fallacy.

11. That hemorrhoids are due to the upright position of man. If this were true, the entire population of the earth would be entitled to hemorrhoids.

12. That it is necessary to place a rectal plug in the rectum after operation to prevent hemorrhage.

Carefulness in technic is the surest preventive of hemorrhage. When one uses the plug, retention of urine and pain are bound to follow.

13. That there is but one method of treating hemorrhoids. The exercise of judgment is far more beneficial to one's patients than consistency in riding a hobby.

14. That the selection of the type of treatment is entirely in the hands of the surgeon and that the patient has no right in the matter.

When the doctor himself becomes a patient, he is more than ready to give suggestions as to the type of treatment to be used on himself. He is just as adverse to an operation as the lay patient is.

15. That all rectal pains are due to piles. Take nothing for granted; take two minutes and give the patient the benefit of a rectoscopic examination.

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Certain Experiences with Gallbladder Surgery*

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The literature upon gallbladder disease and gallstones is of huge proportions and this communication may have little to merit its publication. But we often note that conclusions and figures of a decade or more ago are used to support opinions of the present day and do not represent current surgical practice. This paper is based on an experience comprising 128 operations for chronic gallbladder and tract diseases, including gallstones, done in the Hospital of the University of Pennsylvania and the Misericordia Hospital from September 1, 1922, to May 1, 1925.

Next to appendicitis, disease of the extrahepatic ducts and gallbladder is the most frequent of the lesions treated by the surgeon. Because of the relation to the liver and pancreas, they are much more interesting and very much more complicated than acute or chronic disease of the appendix. The great increase of interest in the function of the liver and of the gallbladder and the minute studies of the pathology of the gallbladder and the chemistry of the bile have been watched with great interest by surgeons, ever ready to apply the work of the laboratory to the solution of clinical problems.

The diagnosis of gallbladder disease is not particularly difficult if we keep certain facts in mind. Most cases occur in stout women who have borne children. In the series reported in this paper 82.5 per cent. were women. I have noted that most of these women have put on weight rather rapidly, and in many the early symptoms have developed shortly after the birth of a child. The ages varied from nineteen to seventy-six years and average forty-three years; fifty-nine per cent. of the patients were over forty and twelve per cent. were over sixty. This means the age when the patients came to operation and not the age at the onset of symptoms, which I have not calculated. It is interesting to recall that Alvarez (1) believes that on the average nearly twenty years elapses between onset and operation, a period characterized by many courses of treatment, most of them directed against such vague disorders as nervous indigestion, flatulent dyspepsia, intestinal autointoxication and the like. The attacks are usually sudden in onset and short in duration and are not amenable to dietary regulation.

Many patients complain of mild symptoms, suggesting a focal infection, such as chilliness, vague pains, joint pains, etc. During the attack the liver edge is nearly always tender. Sometimes later the attacks become more severe and often typical of acute cholecystitis. Colic occurs and the tender, distended gallbladder can be palpated. Usually these attacks extend over many years and are rarely severe enough to require an anodyne. Flatulence, epigastric distress, eructations and slight nausea may accompany the taking of food.

If we will remember that, next to appendicitis, gallbladder disease is the most frequent surgical lesion in the abdomen, that it is not necessary to wait for typical violent colic and never for jaundice, we will save lives and much postoperative suffering. In the series herein reported every chronic uncomplicated case recovered. Empyema, common duct stone, biliary cirrhosis and pancreatitis are the major complications. Extensive adhesions from frequent acute attacks prevent the complete recovery of the patient after cholecystectomy.

In recent years we have learned to lean heavily on the laboratory for assistance in diagnosis. A simple gastric analysis is not of much value, but it is well to know that the values are low in gallbladder dyspepsia, whereas in duodenal ulcer they are almost invariably high. Gatewood (2) found achlorhydria or hypoacidity in forty-five per cent. of a series of 192 patients with gallstone disease.

The x ray often helps materially in the diagnosis of pericholecystic adhesions. Spiderleg distortion may be seen, but is also present in the congenital membrane case; high fixation of the duodenum, fixation of the hepatic flexure, distortion of the pylorus to the right are all significant. The direct evidence is not so important unless positive. Thirty-one of my patients were x rayed for stones: In nine cases stones were diagnosed and in eight the finding was correct (eighty-nine per cent.); in nineteen cases the x ray evidence was negative, but in only five were gallstones absent and the x ray correct (twenty-six per cent.). In the other three the finding was simply a "visible gallbladder"; two had stones and one did not. Recently we have had added to our

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resources the Graham test (cholecystography). It is not necessary to discuss this test as the literature now teems with papers and I had no experience with it in the group of cases under discussion. Only lately have we begun the routine use of the oral administration of the sodium tetraiodophenolphthalein. Moore (3) has reported a correct diagnosis of gallbladder pathology by cholecystography in 92.5 per cent. of fifty-five cases in which the diagnoses were confirmed by operation.

The exact function of the gallbladder is still hidden from us. Is it a vestigial organ, a diverticulum, of the primitive biliary tract? Does it serve for purposes of storage? Since McMaster has shown that the gallbladder of the dog can concentrate bile to about one tenth of its original bulk this explanation becomes more tenable. I can remember the time when the surgeon would point out the black viscid bile as pathological, when he found no gallstones at operation. Lyon uses this fact to demonstrate his B bile. We never see this concentrated bile in the gallbladder with markedly diseased walls. This concentration may be termed a sort of physiological stasis during periods of rest in digestion. Pathological conditions may occur when the cholesterol of the bile crystallizes into the clear single gallstone occasionally encountered. But suppose that pathological stasis occurs, from various causes, bacterial action may produce a catarrhal cholecystitis or a mural cholecystitis, and with precipitation of the bile pigment the multiple calcium pigment stones appear.

In 1905 I suggested (4) that an occasional cause of gallbladder infection might be the passage of microorganisms from the liver to the gallbladder through the superficial collecting lymphatics. Graham believes this is the frequent route and regards hepatitis as concomitant with cholecystitis. Heyd has worked on similar lines. So we are gradually coming to regard gallbladder infections as part of infection of the whole biliary system. The clinical studies from Lyon's laboratory point to the fact that he regards the gallbladder as of lesser importance, except in so far as surgery must remove it, in his method for artificial drainage of socalled poisoned bile.

Thus the liver is brought into prominence and a great deal of effort has been made to devise a method whereby liver function can be measured. So far these efforts have been balked by the apparent fact, as shown by Mann, that a considerable amount of the liver can be removed and the animal live and its liver function. The test devised by Rosenthal is that most commonly used. Further studies of the liver function lead us to suspect that the bile pigments are not formed in the true liver system. McNee follows Aschoff in believing that cells of the reticuloendothelial system elaborate the bile pigment. Then cells occur in the liver, spleen, bloodvessels and in other parts of the body, the larger portion being found in the walls of the blood sinuses of the liver and known as Kupffer cells. The polygonal cells of the liver probably play no part in this synthesis. The bilirubin may simply pass through them, to be excreted in the bile, or it may be chemically altered during the secretory process.

This work has led to the development of the van den Bergh, Fouchet, icterus index, and other tests which are believed to determine whether a jaundice is obstructive or hemolytic in origin. Dr. I. S. Ravdin, Dr. E. G. Ravdin, and myself (6) have described our experience with the van den Bergh test, but the work was only begun near the end of the series of operations here reported. We now find the test of extreme value, not as a test of liver function, but as a test of the working of the extrahepatic passages.

The taking of a minute case history is invaluable in the study of a supposed gallbladder infection, or a case of gallstones, but it most certainly must be associated with accurate modern laboratory tests if we hope to make a high percentage of accurate predictions as to the pathological condition present and the possibility of successful surgical treatment. The discussion in this paper is based on the results of 128 operations on 126 patients. There were eight deaths, a mortality of six and three tenths per cent. The cases are consecutive and comprise all of the operations done by myself and my assistants except those operations on the gallbladder performed in the course of the surgical treatment of acute pancreatitis, malignant disease of the pancreas, splenomegaly and one case of reconstruction of the common duct. For purposes of analysis the series is divided into:

	Cases	*Deaths*
Acute suppurative cholecystitis	19	1
Acute cholecystitis with common duct obstruction	5	2
Chronic cholecystitis	78	0
Chronic common duct obstruction	26	5

This grouping is found convenient because the principal problems in treatment concern the management of the acute empyema, or gangrene of the gallbladder, where the question of primary cholecystostomy or cholecystectomy must be settled; the association of a common duct stone with acute suppuration of the gallbladder and possibly of the main ducts; and the management of the ordinary common duct stone, especially with marked jaundice, hepatitis and pancreatitis. The ordinary chronic cholecystitis, with or without stones, is a comparatively simple problem.

1. *Acute suppurative cholecystitis.*—This group (nineteen cases) were characterized by clinical evidences of acute inflammation, such as tenderness, rigidity, fever and leucocytosis, and the pathologic appearance of acute suppuration. Sometimes the gallbladder was moderately diseased, but more often it was greatly swollen, intensely congested and with walls often nearly a centimetre in thickness. The evidence of edema was conspicuous. The liver in the vicinity of the gallbladder usually showed the appearance of congestion. In fifteen cases the gallbladder contained multiple stones, in three a single stone and in one there were no stones. Cholecystostomy was performed five times with no deaths; two of the patients required a cholecystectomy later. Cholecystectomy was done on fourteen patients with one death. The notes in this case were:

Case I.—Mrs. McG. (No. 454), aged fifty-four years, extremely stout. Four attacks of biliary colic, starting one year ago. Had typhoid fever at age

fourteen; acute appendicitis with operation eleven years previously. Admitted, University Hospital, November 20, 1922, suffering from pain, fever, a leucocytosis of 25,400 and a distended gallbladder. She was slightly jaundiced. The lungs were clear and the heart sounds regular and of good quality. The diagnosis of empyema of the gallbladder was made.

Operation was performed the next day under gas ether anesthesia and lasted forty minutes. Transverse incision. A large, acutely inflamed gallbladder containing pus and many stones was found. Cholecystectomy was done and three drains introduced. There were no anesthetic complications. I saw her at about 10 p. m., and was rather pleased with her condition, although she was restless and a little irritated because we could not get her off to sleep. Her temperature was about 102° and the pulse 128. She was given a small dose, 1-200 gr., of scopolamine because I did not want her given any more morphine. At about the same time she voided five ounces of urine and was not at any time uremic. At 12 o'clock the temperature was 102° and the pulse 120; at 2:30 p. m. the temperature and pulse were practically unchanged. At 3 a. m. the nurse noted that the patient's circulation suddenly had failed; a few minutes later she was given intravenous saline solution and other stimulation, but failed to respond and died at four o'clock, eighteen hours after operation. As no autopsy was allowed, we can merely speculate upon the cause of death. Acute dilatation of a fatty heart weakened by disease, sepsis and the shock of operation, are the most probable causes.

Three points for discussion are suggested. Should immediate operation be performed in these cases, or is it justifiable to wait a few days in the hope that eliminative measures and the use of digitalis will improve the condition of the patient? I think that no hard and fast rule can be followed. While there is not the same urgency as in acute appendicitis, nothing particular is gained by a long delay. I usually wait for twenty-four to forty-eight hours only. The fact that there was only one death in nineteen cases (five and three tenths per cent.) shows that we got along fairly well. Perhaps it would have been better to have employed local anesthesia, but I am partial to cholecystectomy and find local anesthesia most difficult in stout people when removal of the gallbladder is contemplated. Nitrous oxide or ethylene rarely suffices and some ether is usually necessary. On the other hand, cholecystostomy can be done readily under local anesthesia and perhaps should be considered the operation of choice in this group, particularly if the surgeon has not had much experience. A large percentage will require a second operation later, but the ultimate mortality is the important thing to hold in mind. Cholecystectomy is easy to do, except in those cases which have perforated and are surrounded by a local abscess. Troublesome oozing from the inflamed liver bed is the principal complication and as packing is fraught with later danger I think that on the whole cholecystostomy is safer.

2. *Acute cholecystitis with common duct obstruction.*—This group, fortunately small in number, gave me a mortality of forty per cent. in five cases. In two cases the gallbladder contained multiple stones, in one a single stone and in two there were no stones. In all five a cholecystectomy was performed. In the three patients who recovered, the obstruction was caused by stone in two cases and pancreatitis in the other. In one the common duct and the gallbladder contained socalled white bile. One patient was reoperated upon two months later for fistula, which was then closed.

One of the fatalities was a pure error in technic. The patient had a cholecystostomy nine years previously and was admitted acutely ill with empyema of the gallbladder and jaundice. Adhesions were extremely dense and I so cut and injured the colon that a resection was necessary. She died two days later from peritonitis. The other death occurred from cholangitis and hepatic depression. The notes are as follows:

Case II.—Mrs. M. F. (No. 4945), aged sixty-four years. Very aged, indigestion for five years. Twenty years ago had single attack of pain associated with jaundice; always sallow; three days before admission had acute attack. Admitted with symptoms of acute empyema of the gallbladder. Leucocytosis of 20,000. Plasma carbon dioxide, forty-eight volumes per cent. Patient was treated for a period of four days with continuous hypodermoclysis, digitalis, etc.

Operation on January 31st, under local anesthesia. Gallbladder was found filled with stones and was removed. No exploration was done of the common duct, but a tube was pushed through the cystic duct and established drainage. The liver was extensively involved, with biliary cirrhosis. The patient became drowsy and the blood urea showed seventy-two mgms. per hundred c.c. On February 6th it was thought that she was on the road to recovery, but two days later the temperature and pulse began to rise. In spite of all treatment death occurred fifteen days after operation. No autopsy was obtained.

I will not comment at length upon this group, the gallbladder problem is similar to that in the first group and the common duct problem to that in the fourth group. Here we have both combined and the patient must react against the sepsis and the obstruction to the bile flow. Note that in the second fatality the common duct drainage was attained by the simplest method possible, namely, the utilization of the stump of the cystic duct. Cholecystostomy alone is useless, as a rule, because several days will elapse before bile will flow through the cystic duct, obstructed as it is by the inflammatory swelling. The common duct must be tapped, although the stone should not be sought by spooning. It can be removed if immediately accessible. Even with the best technic the outlook in these cases is always serious.

3. *Chronic cholecystitis.*—This constitutes the largest group and includes twenty-four cases of simple cholecystitis and fifty-four cases of calculous cholecystitis (nine single stones and forty-five multiple stones). Cholecystectomy was performed seventy-three times and cholecystostomy five times. There were no deaths in either series. In thirty-six cases the cholecystectomy was the only operation performed; additional procedures were done on thirty-eight patients, removal of the appendix (thirty

times), gastrojejunostomy (five times), miscellaneous gynecological procedures (five times). Rammstedt pyloroplasty, appendix stump, adhesions and excision tuberculous mesenteric glands, one each. Twice a cholecystostomy was followed by cholecystectomy.

Cholecystectomy for noncalculous disease was considered indicated when the gallbladder was evidently diseased by reason of thickening, pericholecystic adhesions or the aspiration of bile mud. In one case a cholecystostomy was done. The patient was jaundiced and the preoperative diagnosis was carcinoma of the pancreas. Nothing except extensive adhesions was found as a cause of the jaundice. Cholecystostomy was thought to be the safest treatment and two and a half years later the patient reports that he is perfectly well. The fistula closed in one month.

Cholecystectomy has been the operation of choice in calculous disease of the gallbladder and I cannot be convinced that simple drainage offers permanent cure in any degree comparable to removal. The literature is filled with evidence that bears this out and need not be quoted here. Naturally there may be cases where the presence of pancreatitis may seem to justify bile drainage, but if the gallbladder is in good condition internal drainage (cholecystgastrostomy, etc.) is better than external and if the gallbladder is extensively diseased it is probable that the cystic duct is occluded. The fact that there were no deaths after cholecystectomy in this group shows that the operation is safe enough. The end results will be considered later. Two patients had had a previous cholecystostomy elsewhere and had a recurrence of gallstones.

Five patients had coincident gallbladder disease and duodenal ulcer. In four the gallbladder contained multiple stones, in one there were no stones, but the gallbladder was thickened and adherent and considered primarily involved. In all a posterior gastrojejunostomy and a cholecystectomy was performed. In three the appendix was also removed. In one patient I performed a Rammstedt operation because the pylorus seemed small and stenotic. As noted the appendix was removed many times, sometimes through the upper transverse incision almost always used, and sometimes through a separate McBurney incision. The association of appendicitis and gallbladder disease has been much discussed, and without proper investigation I am yet inclined to think that in the absence of an acute attack the etiological factor of the appendix is usually exaggerated. The percentage of crooked, adherent appendices will be found just as great when operating for fibroids of the uterus as for gallstones.

4. *Chronic cholecystitis and common duct obstruction.*—This group comprised twenty-six cases with five deaths (19.2 per cent.). Thirteen patients had multiple stones in the gallbladder and stones in the common duct. Cholecystectomy was done, the stones removed from the common duct and the duct drained with a T tube; three of these died. In three cases the gallbladder was removed for multiple stones and the common duct found to contain white bile. The duct was drained, the obstructing stone not being seen or felt. Pancreatitis was present and might have been the cause of the obstruction; two of these patients died but the third, a woman aged seventy-six years, deeply jaundiced, recovered and is well seven months after operation. Four patients had stones in the gallbladder but none in the duct. They recovered after cholecystectomy and duct drainage. Three patients had duct stones but no gallbladder stones and two had no stones; all recovered after cholecystectomy and duct drainage. One patient had a cholecystectomy three years previously and was found to have duct stones. She recovered.

It is evident that, from the viewpoint of mortality, this group is the most important one, and while we may be caustic in our criticism of patient or physician for delay yet the fact remains that the surgeon must rescue the patient. There is not space to discuss many of the points involved. The patient must be prepared by the method best brought out by Walters, of the Mayo Clinic. Haste is rarely indicated and three or four days of preoperative preparation are absolutely necessary. Water, glucose, calcium chloride and perhaps digitalis are the main things. From some recent experience I am inclined to think that a well executed nonsurgical drainage carried on for a few days is helpful. Sweet thinks that ether is a liver poison only second to chloroform, hence ethylene or nitrous oxide reinforced by novocaine locally is the anesthetic of choice. Sometimes local anesthesia alone suffices, but I have not been able to manage choledochostomy and cholecystectomy by local anesthetics.

Cholecystostomy is easily done under local anesthesia, and in the very ill patient, with a high van den Bergh test (ten to twelve units, for example) without tight jaundice, with some fever, some mental depression, or with a high degree of blood sugar, close attention should be paid to the gallbladder to see if the cystic duct is patulous or not. If so, a primary cholecystostomy is the operation of choice. Those who are very obese are severely jaundiced, have a high blood pressure and interstitial nephritis, are also grave risks. If the gallbladder is not capable of draining bile, the common duct must be opened and the liver drained; but, except in those only moderately ill, spooning of the liver ducts and retroduodenal pressure or trauma must absolutely be avoided. It is true that many patients, quite sick, recover after a complete operation, but the group mortality is too high and the two stage procedure must be extended if we want hope of having less deaths. The following is an example of the sequence of events in a fatal case.

Case III.—No. 3345. Mrs. A. P., aged fifty-one years, emaciated. Symptoms began acutely seven months previously, followed by numerous attacks. Admitted intensely jaundiced and suffering pain. Says she has lost 120 pounds in weight in the last six months. Blood pressure was 140 systolic and 90 diastolic. She was treated in the medical wards for a week and then transferred for operation.

Operation April 22, 1924. Novocaine local and gas anesthesia. Duration one hour. The gallbladder contained two stones impacted in the cystic duct and was removed. The common duct was opened and contained a lot of soft pigment. The common duct was evidently compressed by the stones in the cystic duct. When the T tube was introduced, bile began to flow freely. The liver looked markedly

cirrhotic. Following operation the patient steadily declined, although draining large quantities of bile. Blood transfusion was done, but the patient soon developed the low blood pressure and the weak though not rapid pulse that we have associated with pancreatic asthenia. Death occurred ten days after operation. Autopsy showed no obstruction of common duct and the pancreas appeared grossly normal.

The other deaths in this group occurred, nine, twelve, sixteen and seventeen days after operation, giving an average of 12.8 days for the five. Apparently death occurred from what has been termed cholemia, or, as Heyd expresses it, from liver exhaustion. None of the patients died early from vasomotor depression, but I have seen this type of death several times. I can remember one death in the third group described by Heyd in which coma occurs almost immediately after operation and early death results. He says it has occurred after rather simple types of operation on the biliary apparatus, and, with Killian, he has found such patients show a very high carbon dioxide combining power representing as much as 80 to 100 volumes per cent.

Jaundice is a symptom and indicative of obstruction, but takes on supreme importance because nearly all of the fatalities occur in the group in which it is manifest. In my series seven of the eight patients who died were jaundiced. In the group operated on in the University Hospital, thirty-one (forty per cent.) stated that jaundice has been present during one or more of the attacks. In eleven the gallbladder only contained stones and one case was noncalculous. In three patients stones were present in the common duct, but there was no jaundice. This finding is important because it represents six and five tenths per cent. of the group and shows the supreme importance of palpating the common duct in all cases.

There is another feature of importance, that is, the failure to detect stones even by palpation. Kehr (6) found that forty-six per cent. of thirty-six cases in which palpation of the common duct was negative had calculi in either the hepatic ducts or retroduodenal part of the common duct, and Eisendrath (7) in a series of thirty-four cases in which palpation was negative, found after choledochotomy that he was wrong in 32.3 per cent. of times. Perhaps the old rule of Kehr is a good one—the common duct should be opened when the duct is dilated and thick walled, when there is pancreatitis, and when the gallbladder or cystic duct contained numerous small stones. In the eleven cases of this series in which a history of jaundice was elicited, the trouble confined to the gallbladder and only a cholecystectomy done, every patient has been traced and with one exception is perfectly well; he complains of some gas after meals. This series should be watched over a period of years.

Recurrence.—Ten patients in this series had multiple operations on the biliary tract; four had had a previous cholecystostomy done elsewhere and required a cholecystectomy; in two cases we did a cholecystostomy and later removed the gallbladder; one patient was reoperated upon by Dr. Godfrey for stricture of the common duct due to adhesions, one for a common duct fistula and one for a cystic duct leak with bile cyst, one patient had had a cholecystectomy done by me in another hospital three years previously and returned with a duct stone. None of the patients in this series has so far suffered from recurrent symptoms due to duct stone.

End results.—An effort was made to trace the end results in these cases and either personally or by letter the condition of the patient ascertained from six months to two and a half years after operation.

	Cases Traced	*Well*	*Improved*	*Unimproved*	*Not Traced*
1. Acute cholecystitis					
Cholecystectomy ..	13	12	1	0	0
Cholecystostomy ..	4	3	1	0	1
II. Acute cholecystitis and duct stone	3	3	0	0	0
III. Chronic cholecystitis					
Without stone	23	16	6	1	1
With stone	45	38	5	2	7
IV. Common duct stone..	18	13	3	2	3
	106	85	16	5	12

As the table indicates, eighty-five of the traced patients or eighty per cent., are entirely cured of all previous symptoms for which the operation was performed. The statement of the patient is the standard. In the "improved" group (15.2 per cent.) are included those patients who still complain of some belching after eating or adhesion pain. Two patients were reoperated on, one for adhesions and one for a bile cyst but are now well; they are classed in the improved group. No patient has reported symptoms suggestive of further stone trouble. It is interesting to note that 84.4 per cent. of Group III. with gallstones claim to be perfectly well whereas only seventy per cent. of the simple cholecystitis group are without symptoms. Apparently there was an element of error in the selection of cholecystectomy for some of these patients. We expected that the acute group would suffer symptoms by reason of the greater drainage with consequent adhesion formation but on the contrary ninety per cent. of these patients state they are in perfect health.

The common duct stone groups of cases show an end result of 76.2 per cent. of cure. Three patients died after leaving the hospital, one from chronic pancreatitis, one from intestinal obstruction in the lower abdomen, and one after an operation for adhesions. This patient had had a cholecystostomy elsewhere, came to me for persistent trouble and I removed the gallbladder. Later, her symptoms returned and she again returned but died after the third operation. One of the unimproved cases had had a previous cholecystostomy and there were many adhesions. It would seem as though a final good result in about ninety-five per cent. of the cases speaks well for surgical treatment.

In considering end results we must remember that after other treatment than surgery, such as diet, medicine and duodenal drainage, remissions frequently occur and irreparable liver damage may occur before operation is advised. The patient may recover but the infection in the gallbladder persists and acts as a focus of infection for other organs.

McMaster (8) experimentally has shown that the output and concentration of cholesterol in the bile are subject to profound modification by dietary influence. When a ration rich in cholesterol is given, the amount of substance in the bile greatly increases. This work has led us to give our patients a diet sheet similar to the one advised by Moynihan (9). The relation of diet to postoperative symptoms is also well discussed by Wilensky (10), who emphasizes the importance of a diet free from fats and lipoid bodies.

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Gastrojejunostomy and Gastric Carcinoma

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On November 24, 1925, a patient was admitted to the hospital, complaining of epigastric pain and distress of eight months' duration. On x ray examination a diagnosis of pathological gastrojejunostomy and possible gastric carcinoma, was made. Exploratory laparotomy confirmed this diagnosis. He had been perfectly well up to eight months ago, had had no operations and no serious illnesses, thereby justifying our reporting the case as of unusual interest.

Case.—K. T., male, forty-eight years of age, born in Russian Poland, emigrating to the United States in 1913. His family was still in Poland. He spoke very little English. He was a laborer, in the building trade, married twenty-four years, and had two children, aged fourteen and nineteen years respectively. His family history was negative; no cancer, tuberculosis, or cardiac disease. His complaint was pain in the epigastrium for past eight months.

Eight months ago the patient first noticed pain in the epigastrium which radiated to the right costal margin. He had no vomiting or belching, but began to lose weight and strength. He had had to stop work four months ago. He did not recall having had any childhood diseases. His health had always been good until eight months ago. There was no history of acute infectious diseases, nor operations. His appetite had always been good before the onset of present illness. His bowels had been open and regular, no constipation or diarrhea. He was a heavy drinker of alcohol, a heavy smoker, and had irregular habits of eating, sleeping and drinking. His best weight was 137 pounds; present weight ninety-eight pounds.

He was a middleaged man of medium build, moderately emaciated, and appeared chronically ill. The pupils were equal and regular, and reacted to light and accommodation. His teeth were in poor condition, many being carious; the pharynx was normal. The neck showed no abnormalities. His chest was emaciated, veins prominent, moderate myxedema. Percussion note was resonant, breath sounds were vesicular throughout; no râles.

Examination of the heart showed normal percussion dullness borders. Apex beat was not seen, and felt as a diffuse, weak impulse in fifth interspace, midclavicular line. Pulse rate was slow, regular, no murmurs. Sounds at apex were of fair quality; at base P2=A2. The abdomen was flat and emaciated. There was a slight amount of tenderness in the epigastrium; no masses felt. Liver and spleen were not palpable. Slight tenderness was noted along the right costal margin on deep palpation.

The extremities showed no abnormalities. Knee jerks were present and active.

A provisional diagnosis of carcinoma of the stomach was made.

Laboratory findings.—Gastric analysis showed a small amount of mucus obtained one hour after an Ewald meal by a Rehfuss tube; not suitable for analysis. Urine, specific gravity, 1,024; no albumin or sugar. Blood: hemoglobin, 90 per cent.; red cells, 4,800,000; leucocytes, 7,400; polymorphonuclears, 64 per cent.; small lymphocytes, 22 per cent.; large lymphocytes, 6 per cent.; eosinophiles, 2 per cent.; basophiles, 2 per cent.; myelocytes, 4 per cent. Wassermann was negative.

X ray report.—Sthenic habitus. Position was slightly hypersthenic. Axis was transverse. Mobility was somewhat restricted. Tone and peristalsis could not be accurately determined. Lowest point of greater curvature was two and one half inches above the interspinous line. On fluoroscopic examination a pathological opening between the greater curvature of the stomach and the jejunum (?) was plainly visible. The meal escaped so rapidly that a complete stomach outline could not be obtained. There was a marked filling defect along the major portion of the greater curvature. The meal was also seen to escape through the pylorus. The duodenal cap filled completely.

Six hour examination: The head of the meal was just beyond the hepatic flexure, the tail in the terminal ileum. There was no gastric residue. Twenty-four hour examination: The head of the meal was in the rectum, the tail in the cecum. The appendix was not visualized. Colon enema observed under fluoroscope showed that the enema filled rectum, sigmoid, descending colon and transverse colon as far as the hepatic flexure without defect. At this point there was some hesitation, but the meal apparently reached the cecum.

*From the Passaic General Hospital.

Abnormal findings.—Defective filling of the stomach on the greater curvature and a pathological opening to the jejunum.

Operative findings.—Exploratory laparotomy was performed on December 2, 1925. A right rectus incision five inches long was made. The greater omentum was found decreased in size and slightly thickened; no masses.

The stomach was decreased in size, semitransverse position, pylorus free and mobile, but retracted towards left. Entire stomach was markedly thickened and firm extending uniformly from pylorus to cardia. Diffuse scirrhous carcinoma diagnosed.

On the posterior surface near the cardia, on its greater curvature, there was a small area adherent to a loop of the jejunum below Treitz's ligament about two centimetres in diameter; around the periphery, a few bands of adhesions were seen; no adhesions to omentum or peritoneum.

The condition was diagnosed as pathological gastrojejunostomy.

The liver was normal in size, shape and consistency. No nodules were noted. The mesenteric lymph nodes showed no generalized enlarged masses, no metastatic growths apparent. The spleen was normal in size and consistency.

Acute Postoperative Dilatation of the Stomach*

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Acute postoperative dilatation of the stomach was first recognized by Riedel in 1892. Since then it has become quite widely known as an important and dangerous complication of any surgical procedure. Even at the present time, however, there are many cases which suffer a stormy postoperative convalescence or go on to a fatal termination because this condition is not promptly diagnosed and properly treated.

Acute dilatation of the stomach may occur in any person regardless of age, sex, the operation performed or the anesthetic employed whether general or local. Gastroptosis, enteroptosis and digestive disturbances are predisposing causes. A history or previous postoperative dilatation is a danger signal not to be ignored because it is very prone to recur.

There are two main theories advanced in explanation of this postoperative phenomenon. The first and perhaps the most generally accepted is that of primary paralysis of the stomach due to some change in the nervous mechanism of the organ. This change is caused by direct trauma to the nerves or more likely by some toxic agent acting centrally. The injurious substance may be bacterial or chemical. The toxic idea is borne out by the occurrence of acute dilatation in toxic diseases such as pneumonia and eclampsia and by the presence of urinary suppression and mental disturbances suggesting toxemia in postoperative dilatation.

The second theory is that the duodenum is mechanically obstructed by pressure from the mesenteric artery as it passes behind the root of the mesentery. Isidore Cohn quoting Connor, who favors this theory, states that in only fifty-five per cent. of cases can obstruction at this point be demonstrated. Against this theory is the rapidity of onset of the dilatation, cases being reported where it has occurred within fifteen minutes during the course of an operation, and occasionally the dilatation has been found to extend below the duodenum. Dilatation also occurs after gastrojejunostomy. It is easy, however, to conceive of a stomach primarily dilated sagging downward, and thereby causing a point of constriction in the duodenum.

The symptoms may appear at any time during the operation or the postoperative convalescence. These are vomiting, rapid pulse, rapid and difficult respiration, epigastric distension, thirst, scanty urine and terminal collapse.

The vomiting alone is diagnostic, when typical, small amounts of a greenish or brownish fluid containing black flakes spill from the mouth frequently and without the slightest expulsive effort. If this type of vomiting occurs only once it is wise to institute treatment immediately, and not expectantly await a recurrence to confirm the diagnosis, because there are cases which go on to collapse and even death without the appearance of this symptom.

The collapse in dilatation is a rapidly approaching terminal state, following a train of nervous symptoms made evident by an apprehensive worried expression and restlessness increasing to delirium.

The pulse increases in rapidity and decreases in volume until it reaches a rate which cannot be counted or becomes imperceptible. It may or may not be irregular.

Thirst is marked and cannot be satisfied even though water is allowed. The giving of water only increases the amount of fluid in the dilated stomach and neither alleviates the thirst nor increases the urinary output, which is scanty and concentrated.

Respiration is rapid and difficult. Epigastric distension is more or less marked, but does not always indicate the degree of gastric dilatation. Tympany elicited over the epigastrium frequently extends high into the left side of the thorax.

Diagnosis is easily made upon the appearance of the characteristic black or brownish vomitus or upon the presence of tympanitic epigastric distention alone. If there is any suspicion that dilatation of the stomach exists, treatment for this condition may be immediately instituted with very little danger and with a great probability of marked relief.

Bloodgood considers high intestinal obstruction in which pain is more marked and distention less evi-

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dent as the most confusing factor in differential diagnosis.

The highest death rate reported by Conner in 1907 was 92.5 per cent. Since then earlier recognition and institution of proper treatment have greatly reduced the mortality of this complication, Borchgrevink reporting 26.2 per cent. in 1913. The gravity of the case is best judged by the rapidity and quality of the pulse.

The treatment is simple and may be divided into prophylactic, mechanical, chemical, and operative.

Prevention of the condition is attempted by instituting immediate postural treatment in all cases having a history of gastric distress and especially of a previous postoperative dilatation of the stomach. In upper abdominal operations careful handling of the viscera, speed and the semirecumbent position assumed as soon as the patient is out of the anesthetic, tend to reduce the occurrence of gastric dilatation.

Once diagnosed, the stomach is immediately lavaged, using tap water heated to a temperature between 110 and 120° F. until the return is clear. A saline or bicarbonate solution may be used instead of tap water with questionable advantage. Lavage should be repeated as frequently as necessary and over as long a period as the condition persists. In acute postoperative dilatation there is no contraindication to the use of the stomach tube. The patient is then placed in the prone position with the pelvis raised or if this is not possible in a right lateral position. The postural treatment alone has been productive of remarkable results.

In the chemical treatment, strychnine, pituitary gland preparations, atropine, morphine and apomorphine have been used with doubtful effect. Saline infusions are most certainly of value in replacing the enormous quantity of fluid lost and according to the animal experiments of Dragstedt, saline or Ringer's solution seems to be a neutralizing agent in the toxemia accompanying acute gastric dilatation. One patient not benefitted by posture and only temporarily by lavage over a period of seven weeks following cholecystectomy promptly recovered after direct transfusion of 500 c. c. of normal blood followed by one saline hypodermoclysis (personal experience).

CONCLUSIONS

1. Acute dilatation may complicate any operative case.
2. The surgeon should have this complication constantly in mind.
3. In case of doubt, it is more dangerous not to use the stomach tube than to use it.
4. Repeated gastric lavage, postural treatment and saline infusion are life saving measures.

A Case of Intestinal Hemorrhage in Pneumococcal Infection

With Clinical Remarks

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Case.—C. J., aged forty-eight years, entered the service of Professor Arnozan June 1, 1922, with fever and pain in the right hypochondrium. A week previously the patient had expelled a tænia.

For the past week patient complained of twisting pain in the abdomen and epigastrium, occurring at irregular intervals during the day and lasting for about thirty minutes, accompanied by bilious dejections. Some attacks occurred in the night, but were much less severe; appetite poor; general lassitude.

Three days before entering the hospital the patient experienced severe pain in both lumbar regions radiating forwards towards the epigastrium, followed by nausea and cold sweats. Since this attack anorexia was complete, food vomited immediately, constant thirst, insomnia, nocturnal restlessness and slight headache. Vertigo when sitting up; no epistaxis, diarrhea or constipation. General depression.

Examination.—General prostration, somnolence; slight degree of icterus. Replies readily to questions. Temperature 100.5° F., pulse 92. Tongue dry, abdomen slightly tender all over, but more so over both hypochondria. Liver normal, spleen slightly enlarged. A few râles at both bases. Circulatory and nervous systems apparently normal. Urine, 500 c. c., dark color; no albumin or sugar. Hemoculture on bile negative. He had had typhoid at nine years, which was complicated, and influenza in 1918. Ethylism.

June 6th. Temperature 100.5° F. As it was 104° F. the day previously, this drop led one to suppose that an amelioration would take place, but a melena occurred on June 7th. On June 8th Meyer's reaction was markedly positive in the stools, but they did not contain any leucocytes. Blood count: polynuclears 67 per cent.; lymphocytes 22 per cent.; large mononuclears 5 per cent.; small mononuclears 5 per cent.; eosinophiles 1 per cent.

June 9th. Hemoculture negative. TAB serodiagnosis negative. Reaction=13.5—6.

June 12th. Hemoculture on broth negative.

June 14th. Severe enterorrhagia consisting of bright red blood. Morning temperature 102° F. Evening 100° F. Auscultation revealed signs of a pleural collection on right, but puncture gave issue to very little fluid. Rivalta positive. The fluid gave a positive macrophagic reaction, but was bacteria free. Trace of albumin in urine.

June 15th. Blood count: neutrophile polynuclears 83 per cent.; large mononuclears 2 per cent.; small mononuclears 9 per cent.; lymphocytes 6 per cent.

June 16th. Culture of bile obtained by duodenal tubage negative.

June 18th. Blood pressure 14—8=2 index.

June 19th. Examination of feces after homogeneization revealed no parasites; blood examination negative.

Urine=850 c. c., cloudy, rather abundant sediment, acid, sp. gr. at 15° C., 1,009; urea 11 gr. 20 P^2O^2 1 gr. 10, sodium chloride 1 gr. 80, albumin 0 gr. 06. A few leucocytes, numerous red cells. Pneumococci distinctly present.

June 30th. Bulging of right side of thorax. Dullness over the entire lung, vibrations abolished; complete respiratory silence, no souffle. Exploratory puncture in eighth intercostal space gave issue to bloody seropus. Another puncture in the sixth intercostal space withdrew a large amount of yellow pus containing a pure culture of pneumococci. Operation for empyema gave issue to about 300 c. c. of poorly mixed pus. Blood pressure before operation: 13—6=2.

July 1st. Blood pressure: 14—7=3. Subcutaneous injection of 100 c. c. antipneumococcal serum. During the day the patient vomitted well mixed greenish pus.

July 2nd. Fifty c. c. serum injected and 40 c. c. on July 4th, 6th and 8th. Blood pressure 18—7=2.

July 10th. Blood pressure 18—7.

July 18th. Injection 20 c. c. serum. Temperature varied between 99° and 100° F. Patient decidedly better.

July 26th. Urine=1500 c. c., cloudy, considerable sediment. Urea 8 gr. 5, phosphates 0 gr. 20, chlorides 4 gr. 50, albumin 0 gr. 30. A few leucocytes and red cells, some crystals of uric acid, no pneumococci.

August 9th. Radioscopic examination showed both apices dark, did not clear up by coughing; large opaque area under left clavicle; both bases opaque; diaphragm functionated well, sinus free. Left heart greatly dilated. Transversal dilatation of vessels.

August 30th. Patient discharged in convalescence. Diagnosis: pneumococcal infection—melena—enterorrhagia (pure red blood)—pneumococcal empyema —pneumococcal hematuric nephritis.

I have been able to collect only eight cases of intestinal hemorrhage in subjects with pneumococcal infection from the literature; there are probably others, but it is evident that this complication is infrequent. In 1905 Schneider published a paper on the intestinal complications of pneumonia and divides these into three forms, viz., the simple enteric, dysenteric and ulcerating hemorrhagic forms. The first two forms—the first being far more common than the second—need not detain us. As to the third it seems to me that although it occasionally corresponds with a pathological reality, it clinically is not sufficiently defined. In point of fact, an erosion must be distinguished from an ulceration and the hemorrhagic is not always due to ulceration.

It may be objected that every time there is ulceration of any section of the intestine that bleeding occurs and the examination of the feces for blood renders great service in the diagnosis of numerous digestive disorders. But these occult hemorrhages are not the same as true hemorrhage which in themselves constitute a complication. For this reason I would divide the third form into two types, namely, the ulcerating and the hemorrhagic.

The ulcerating type usually gives rise to no immediate clinical symptom, unless it be perforation of the gut. This type is often overlooked but we now know that many true gastric ulcers and erosions, likewise of the duodenum, are the result of a toxemia or septicemia occurring at some time in the life of the patient.

Now the toxin of the pneumococcus and pneumonia itself are no exceptions to this law as is made evident by Griffon and Bezançon's experiments, who experimentally produced ulcerations in the guineapig; then we have Griffon's clinical evidence which—contrary to usual events—corroborates in man the experimental results obtained in animals. Lastly we have numerous other instances where ulcers or erosions have been found in the intestine at autopsy of pneumonia cases although these lesions gave rise to no symptoms during life.

Laisné, Billard, Chambers, Claus, Colombo, Simmonds, Krannhals, Hagenbach, Lemierre and Lévesque—not to mention others—have published similar cases in which ulcers due to the pneumococcus or its toxins remained clinically silent, excepting in Claus and Hagenbach's patient in whom symptoms of perforation occurred, as well as in Lemierre's case, in which the disease was early complicated by anuria and collapsus followed by death. The ulcers were found at autopsy.

The hemorrhagic type may simply be a complication of the preceding type or, on the contrary, it may be completely autonomous. The blood voided is fresh —bright red—or transformed during its retention in the gut, and in itself is an evident clinical symptom. Occult hemorrhage should, on the contrary, is due to the simple ulcerating type of the process and may be utilized for diagnostic purposes during the evolution of pneumococcal infections. I would add that occult intestinal hemorrhage should be systematically searched for and when detected may be the means of directing a treatment for avoiding perforation of the gut, a possibility to be feared in these circumstances.

Claus's case, in which perforation of the lesser curvature of the stomach and descending colon, followed by peritonitis, occurring ten days after the beginning of convalescence from pneumonia, clearly leads to the conclusion that a strict diet and absolute rest in bed might prevent this lethal complication.

The cases I have been able to collect show that intestinal hemorrhage is more prone to arise in pneumonia, since in eight out of nine instances of pneumococcal infection this was the case, and the case here reported is the only one that I know of in which the process was a pneumococcia without any localization—at least at the onset. Intestinal hemorrhage is more prone to ensue in serious cases of pneumonia or when this lung process develops in debilitated or alcoholic subjects. However, Vialard's patient was a young girl of seventeen, with a mild pneumonia, while at the other extreme Mathieu's patient presented a pneumonia of particularly alarming type. The seventeen year old girl referred to was the youngest case in which intestinal hemorrhage occurred, while in the other cases the patients ranged from thirty-two to fifty-one years of age.

The date of the appearance of the hematemesis or enterorrhagias in pneumococcal processes varies between the fifth to the twelfth day and I am aware of no case in which it occurred before the fifth day. In two instances it took place on the sixth, and in two others on the twelfth day. Vialard's patient is the only one of which I have notes whose hemorrhage arose as late as the twenty-seventh day.

In the case here reported it is rather difficult to fix the exact onset of the affection as there were no classic symptoms of the onset of the pneumonia. However, bright red blood was passed on the twelfth day in hospital and eight days previously the patient had melena.

PREMONITORY SYMPTOMS

I have endeavored to ascertain—but unsuccessfully—if there exist any absolutely evident and constant premonitory symptoms of these intestinal hemorrhages. However, in Vialard's two cases the temperature dropped the day before the loss of blood took place. In his first case the temperature went down to 97.5° F. and then rose slightly, and the evening before the hemorrhage the patient had a syncope followed by great general prostration. In his second case, two nights before the loss of blood there was a slight rise of temperature accompanied by a feeling of well being which might have been a sign of approaching convalescence, but the evening before the enterorrhagia there was a sudden change, namely, general prostration, pallor, with dimness of sight and hearing, all these symptoms being accompanied by a sudden drop in the temperature. On the following day there was an enterorrhagia to the amount of 500 c. c.

In Dieulafoy's case the day before the occurrence of the hematemesis, the patient had a bad night with insomnia, restlessness, gastric pain and nausea, but the temperature showed no change. In Garnier and Schneider's case a bloody diarrhea took place during a phase of relative apyrexia, but the drop in the temperature was progressive.

In the case I have reported there was a notable drop in the temperature—from 104° F. to 101° F.—on the day before the rather severe melena, while two days before the enterorrhagia the temperature fell from 103° F. to 101° F. in the evening.

Hence, it is clear that in some cases a more or less sudden drop of temperature may occur on the days immediately preceding the hemorrhage. This drop, which takes place without being accompanied by the usual phenomena of pneumonic crisis and without any marked change in the local symptoms, should warn the physician.

When the hemorrhage has occurred, the temperature also may present some changes other than the hypothermy succeeding large losses of blood with phenomena of collapses. In my case the chart presented the inverse type on the day of the melena and on that of the enterorrhagia, and the pulse rate constantly followed the temperature. In Tourtoulis-Bey's case the pulse went up to 135 with a temperature of 103.5° F. the evening before the enterorrhagia. Rathery and Chauffard's patient had a pulse rate of 145 with a temperature of 102.2° F. on the day of the hemorrhage and after this the pulse became imperceptible although the temperature fell, both being very bad prognostic signs.

The blood pressure, taken with Pachon's instrument, during the hemorrhage in my case was rather weak with a low minimum. No reference is made to the blood pressure in the other cases here mentioned. It should be recalled, however, that a number of observers—Gilbert, Castaigne, François and Raynaud—have noted that the pressure is somewhat raised at the onset of pneumonia, while in the phase of full development there is a manifest hypotension which, with pulse and temperature, is important from the viewpoint of prognosis.

These hemorrhages in pneumococcal infection, whose general characters have been outlined, offer a particular physiognomy according to whether they occur in the form of hematemesis or enterorrhagia. The ratio of hematemesis offers to intestinal hemorrhage is as two to seven, or about twenty-seven per cent.

Referring to my case, the peculiarities of the particular phenomena observed are interesting. Melena occurred six days after patient entered hospital, a week later the enterorrhagia took place in a male presenting an acute infectious process, with a high temperature and scanty urine, although there was no appreciable organic localization that could be detected by ordinary clinical investigation.

The condition resembled typhoid, but after a Widal TAB test and several hemocultures on broth and bile obtained by doudenal tubage with negative results, a positive Rivalta was obtained on June 30th, and pleural puncture withdrawing pus containing a pure culture of pneumococcus settled the diagnosis. A pure culture of this bacterium was found in the urine at the same time. Regardless of the localization of the pneumococcus in numerous viscera the patient entered into convalescence after an illness of three months.

Traumatic Rupture of the Spleen

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Traumatic rupture of the spleen without injury to any other viscus is sufficiently rare in itself to warrant the report of a case. Such splenic injuries almost invariably present themselves as lacerations of the organ. Infrequently is the spleen fragmented. The case reported belongs to this latter class.

CASE.—Harry H., aged seven, male, white, family history and previous personal history irrelevant, was struck by an automobile on August 12, 1921, at 4 p. m., and one of the front wheels passed over his abdomen.

About fifteen minutes after the accident he became semiconscious, vomited repeatedly and in his lucid intervals complained of thirst and pain in the abdomen. He was brought into the Brownsville and East New York Hospital at 8 p. m.

Physical examination revealed an anemic child in some shock, with shallow, sighing respirations, com-

plaining of thirst and pain in the upper abdomen. Temperature 101°, pulse 110, respirations 32. Mucous membranes pale, abdomen boardlike with marked tenderness in the left hypochondrium, liver, kidneys and spleen not palpable. Tympany in the centre of the abdomen, dullness in the flanks, no obliteration of liver dullness. Bladder catheterized and clear urine obtained. Blood count, erythrocytes, 2,500,000; leucocytes, 12,200; hemoglobin, 35 per cent. A provisional diagnosis of ruptured viscus was made and the patient operated through a right rectus incision. A large amount of fresh blood was found in the abdominal cavity. Two pieces of spleen found loose in the pelvis were removed and the remainder was found still attached to the splenic pedicle. The pedicle was ligated and a hypodermoclysis begun, after which the remaining portion of the spleen was excised. The free blood was wiped out with lap sponges and the abdomen closed without drainage.

The patient received 350 c. c. of saline on the table, and then at 12:30 a. m., 275 c. c. more and again at 6 a. m. another 400 c. c., each time by hypodermoclysis.

From then on he had an uneventful convalescence with the exception of the development of signs of a left pleural effusion on the 22nd, which disappeared spontaneously by the end of the month. Sutures were removed on the 21st, showing primary union and the patient was discharged on September 1, 1921.

The urine reports were negative throughout excepting for traces of albumin which persisted throughout the convalescence in the hospital. Blood counts were taken as follows:

	Hemoglobin	*Red*	*White*
August 13, 1921	35%	2,500,000	12,200
August 16, 1921	42%	3,000,000	11,500
August 22, 1921	53%	3,200,000	19,000
August 24, 1921	51%	3,400,000	26,000
August 29, 1921	55%	4,200,000	11,000
September 29, 1921	55%	4,000,000	11,300

It was interesting to note that the differential count showed a gradual diminution in the polynuclears and an increase in the small lymphocytes.

Two months after the operation the patient exhibited enlarged lymph glands all over the body; particularly prominent were the cervical and inguinal glands. Two years later there was no evidence of glandular hypertrophy, at which time he was in good health.

The prime motive for reporting this case is to take advantage of the opportunity to elaborate upon two important conclusions which can be drawn from it, and also to discuss the value of the spleen to the human economy.

In deciding for or against operation in cases of abdominal traumatism, an important factor is that part of the history which deals with the means by which the injury was sustained. If all patients receiving abdominal traumatisms were to be treated expectantly until well developed symptoms of visceral damage were noted, and then laparotomy performed, much valuable time would be lost in many instances where operation would reveal ruptured intestines with beginning peritonitis. An accurate history of an injury inflicted by a great force would immediately predispose towards operating rather than temporizing, even though the physical signs warranting exploration were not absolute.

The immediate prognosis in all cases of traumatism should be guarded and whenever possible, the patient should be kept under observation in a hospital for twenty-four hours. In this instance the patient was sent away from one institution without a release, and a practitioner attempted to assure the relatives that there was no cause for apprehension.

This boy is now deprived of his spleen. How he is going to combat the shocks of life depends upon the value of the spleen to the body. The spleen is the largest lymphoid structure in the body. It has been shown that there is a marked increase in the number and size of lymph glands following splenectomy. Because of this relationship and also because the spleen becomes enlarged in acute infections and intoxications, it would seem that it acts as a barrier to infection protecting the body against toxic invasion. It follows then, that splenectomized persons are more likely to succumb to infections. Clinical experience does not bear this out, probably because the loss of the spleen is compensated for by the hypertrophy and hyperplasia of the lymphatic system.

The erythrocytes which have completed their life cycles are destroyed in the spleen and their iron is temporarily stored there. The spleen in itself has but slight hemolytic power, but is powerfully activated by liver extract. After splenectomy it has been observed that the lymphatic glands have an augmented ability to destroy red cells.

The spleen aids in the formation of leucocytes. This function is also taken over by the hypertrophied lymphatic glands after splenectomy.

The spleen undergoes rhythmic contractions about once a minute. These contractions help maintain lymph flow. It also begins to enlarge shortly after a meal, reaching its maximum in five or six hours, after which it gradually resumes its normal size. This enlargement is supposed to result in the accommodation of considerable portal blood in the effort to regulate the blood supply in the splanchnic region. Xanthin, adenin, guanin and uric acid have been found in the spleen and for this reason it has been suggested that the spleen is concerned with metabolism.

In man a large number of the cells classified as belonging to the reticuloendothelial system are found in the spleen, namely, the reticulum cells of the pulp, endothelial cells of the blood sinuses and the splenocytes. The cells of this system, besides their activity in the processes enumerated above, are intimately concerned with the formation of bile pigment, storage of lipoids, metabolism of phosphorus, formation of immune bodies, ferment production. These processes are all of considerable value to the body, but fortunately the cells of the system, situated elsewhere than in the spleen, as, for instance, in the cortical nodules of lymph nodes, lining cells of the lymph sinuses, Kupffer cells of the liver capillaries, the lining cells of the capillaries of the bonemarrow, the adrenal cortex and hypothysis, can and do compensate for the loss of the spleen, through hypertrophy.

Clinically its removal does not materially affect the welfare of the person. A few cases have been reported in which the spleen was congenitally absent. Therefore, although an organ of considerable importance to the body, in the face of injury with severe hemorrhage the most conservative form of treatment is splenectomy.

Historical Medicine

Ancient and Modern Medical Heresies

II—*Chiropractise in the Ancient Profession*

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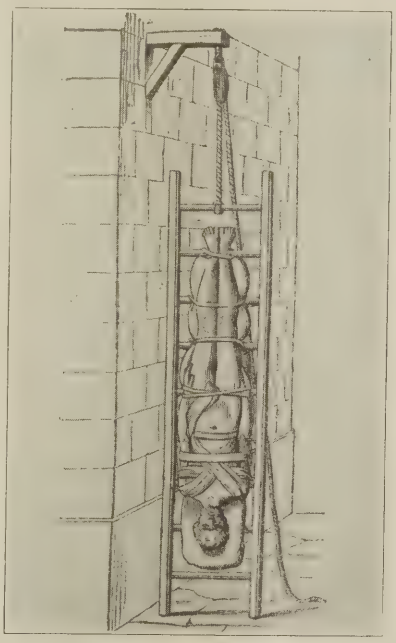
In the last paper I was busy tracing out the germ of homeopathy and Christian science beyond the time of Galen for most medical heresies like most heresies of any kind have in them some germ of truth which has its affiliation with some fundamental basis of human thought and no human theory is without an element which, pursued to its ultimate analysis, leads us into a blind alley of absurdity. We shall find these things fully illustrated in what I shall have to say of chiropractise, or however the art is to be called. A number of years ago I was interested in the traces I found of it in the Hippocratic books, and this interest later found some expression in the pages of this journal (1). In the treatises of Hippocrates on fractures and dislocations there are some curious implications and connotations which it will not be devoid of interest to follow into Galen's writings. To refer as briefly as possible to this former interest (2) I will repeat that in several places in the books, both genuine and those supposed to be the work of another author or authors, the pathology involved a supposed dislocation of a cervical vertebra—the vertebra dentata—"in the course of a fever when the neck becomes suddenly distorted and the patient can hardly swallow and there is no tumefaction, it is fatal." This is the language of the Prorrhetics and Coan Prenotions (3a), but in the Aphorisms it reads a little differently, "incurvation of the spine at the vertebra next the occiput" (3b). I take it from Adams's commentary on this that a hundred years or so ago Sir Charles Bell described a disease Adams thought might be it under the head of "Inflammation and laceration in the Atlas and Vertebra Dentata" (4). It is supposed by Adams that this first book of the Prorrhetics and the Coan Prenotions are both older than Hippocrates II and one theory largely held by many critics is that the *Aphorisms* are compiled from the written works or oral instruction of the Master, but from a passage in the book on the Articulations (3d), which all critics ascribe to him, the view evidently to be inferred is that the second cervical vertebra can not be lacerated or displaced in this way without causing immediate death and in the *II Epidemics* I do not see as Littré seems to think he commits himself to this belief at all. Strange to say this belief became recrudescent in the time of the great French lexicographer (3c). It is then no further cause for wonder that at this time of Littré and Adams there was no criticism of the great frequency with which Hippocrates apparently met deviations of the spinal column from its normal shape due, as he thought, to partial dislocation of the body of one vertebra on that of the other, but he explicitly says that it is rarely the case that one or more of the vertebra are torn from their articulations or experience much displacement, "for the displaced vertebra would compress the spinal marrow and induce insensibility of many great and important parts." Practically the same verdict is given in the Mochlicus (No. 37). He is very sceptical in both these general treatises of any attempt proving successful to replace a dislocated vertebra and it would seem very singular if he should believe the second cervical vertebra could suffer such an accident in quinsy or diphtheria, about which the discourse is, where Littré seems to think he means a dislocation.



For Spinal Curvature
(Littré's *Hippocrates*)

We are for this reason, if for no other, driven to the conclusion that the author of the *II Epidemics and Articulations* and the Mochlicus was not the author of the *Aphorisms* and he not only did not write the *Prenotions* and the *I Prorrhetics* but he did not approve of the passages referred to, if they were in existence before him.

It would seem then that Galen was correct in his surmise that Hippocrates knew the function of the spinal cord and perhaps the final origin of the nerves of motion and sensation in the brain, though perhaps this is not here to be implied. Galen's master Pelops (5a) knew the nerves came from the head as did Erasistratus, but the latter, at least when young, thought they originated in the meninges and not in the brain proper, while even Galen in his day, four hundred years later, thought it worth while to demonstrate and record experiments of his own clearly, it seems to us, proving the cerebral origin of the nerves. Possibly they were known to Alcmaeon two hundred years before Aristotle. Galen even supposes (5b) Chrysippus, the preceptor of Erasistratus, knew the nerves came from the head yet had the folly to think it was the heart supplied them with power. The idea that the nerves had their origin in the meninges was due to confounding them with tendons and fibrous structures. Aristotle

thought they started from the fibrous structures of the heart and others besides him that the arterial coats at their ends gave rise to them, and these vessels carried the control of the muscles.

We can not believe therefore Hippocrates had any correct conception of the function of the nerves, which first after him Herophilus and Eudemus carefully described, perhaps in the early years of Erasistratus (5c). Although Aristotle made some distinction between the marrow of the bones and the marrow of the spinal cord, it is not much and despite the fact Galen seems to think (5d) Plato may have made a significant deduction neither he nor Aristotle had any appreciation of its function, though the latter noted its continuation with brain substance. Primitive man, even the butchers and cooks, as Galen is fond of saying, knew as much. In section No. 45 of the Articulations (3d) Hippocrates gives a little space to the description of the spinal cord and says "as for the spinal marrow itself, what its coverings are, whence they spring, where they end, and with what they communicate and what the functions of them are I will explain," but the few words which follow neither the translation of Littré nor the commentary of Galen in the least explain, nor do the translation and remarks of Adams enlighten us, but the latter seems to infer that Hippocrates had written some anatomical work which has not reached us. So far as Littré's text goes it is only his intention to write it he announces, "they will be described in another work," he says of the spinal structures. The work on The Flesh (3e) gives more succinctly than Aristotle (6) intimation of the connection of the spinal cord with the brain and distinctly says it is not like the marrow of the bones. Adams places the date of this spurious book of the Hippocratic Corpus after Aristotle, but neither in this nor in other late books, manifestly spurious, is there any hint of its real function, while the reference in *Articulations* is indubitable evidence that Hippocrates II, if he wrote anything in medicine, ascribed correctly the cause of paralysis of the muscles of the body to injury of the spinal cord. From the time of Hippocrates to the time of Galen, whatever may have been done on the nerves in the meanwhile, we have no such unequivocal evidence.

The conclusion seems to be inescapable that Hippocrates II knew what dislocation of the spinal column portended and I may be excused for thus adducing the evidence on which it rests at a little length because it throws light on his decided views as to the value of manipulations of the spine by the chiropractors of his day. He was not so vehement and unphilosophical as we are, nor so vitriolic as Galen when he disagreed with any one. Some supposed that complete dislocation forwards is easily remedied. "Many are ignorant and profit by their ignorance." These are the ones we charge with knocking now not unsuccessfully at the doors of the profession for admission but there can be no doubt the activity in the regular profession today, in bloodless surgery, in physicotherapy for instance, is a reflex excited in men of medical science from without. But Hippocrates does not say these men are charlatans and frauds, he even says some of them believe these anterior dislocations do not stand in need of reduction, but get well spontaneously. "Such a case is not to be reduced by succussion or by any other method, unless we are to cut open the patient and then having introduced the hand into one of the great cavities were to push outward on it from within, which one might do in the dead body, but not at all in the living."

Galen seldom contradicts Hippocrates and never speaks of him but with reverence, with bated breath as it were, never ridicules or addresses him across the ages with familiar jibing—I know of no one else, except possibly Plato, of whom without exception this is true. Of Plato he had borrowed more than of Hippocrates in this book on their theories. Indeed Plato has more influenced the trend of his speculative thought than Hippocrates, because the latter deals with supposed realities and facts which are always changing, while Plato deals with idealities which are eternal and in essence unchanging. When Galen does speak in correction of Hippocrates it is in a deprecating manner, not in the modern patronizing manner we use toward our elders. To compare its manners otherwise unfavorably with those of Galen is too severe a charge to bring against the courtesy of the modern profession. For we are all only half way men, *nihil nimis,* nothing too much in the way of praise or blame for those within the pale. Whether within the pale or not, Galen fell on his knees before his admirations and went after his opponents with a club. He does not, let us say in extenuation of some of his polemics, pretend he has more knowledge because he lives in the present instead of the past as is the modern patronizing manner. Knowledge for him has not increased, evolution is out of the question, he is a *descendant* of Hippocrates, he has not ascended from the Master's lower level. Things have changed of course, but things that were important for Hippocrates at the time he wrote some five hundred years before, possibly made him forget for the moment to mention a point in the differential diagnosis of downward displacement of the shoulder. The hollow left above was pronounced and really for a close observer could mean only one thing, but one less careful than Hippocrates might mistake the depression due to a fracture of the acromion process for a dislocation of the head of the bone. Something in this manner he talks of the Master, quite differently of most others. He tosses only bouquets at Hippocrates and only bricks at Chrysippus and Asclepiades.

Galen believed a good many books of the Hippocratic Corpus genuine, which more modern criticism has rejected. The passage in the Prorrhetics of Hippocrates as to the displacement of the odontoid process causing laryngeal and pharyngeal obstruction, which was probably diphtheria, he accepts as coming from the hand of the Master (5e). As to the displacement of the other vertebræ, Galen quoting Hippocrates has no doubt of its occurrence and he differentiates conditions of dislocation from those of fracture, saying the former are easily treated and the latter destructive. In other words all the displacements of the spinal column causing compression of the cord he calls fractures, but Hippocrates does not. This is an instance where Galen is disingenuous, this time out of reverence, not malignity. In order to agree perfectly with Hippocrates he makes Hippocrates say something which does not exist in the text we have. However they both agree that displacement posteriorly is

not serious. They both in this seem to regard the greater or less prominence of the spinous processes and the lateral deviations of the spine as dislocations. Some of these we admit can be easily benefitted by exercise and posture, some of them may be much improved by more difficult mechanotherapy—by rubbing and pulling at them—never. Hippocrates says nothing as to the symptoms in these cases. He was evidently thinking of the naked backs he saw in the palæstræ and so was Galen, who in his younger days was a surgeon to the gladiators at Pergamum. Our ideas in regard to fracture and dislocation of the spine have frozen into formulæ which mean very largely if not entirely acute surgical cases. Deviations of the spine in our modern terminology do not mean dislocations, certainly not disarticulations, but Hippocrates and Galen had something more in view than the rising and sinking of the spinous processes of the vertebræ and the lateral inclinations of the spinal column in our sense. They postulated the possibility of a very much greater slipping of the surfaces of the vertebral bodies on one another without compression of the cord than we are accustomed to think of. We see this in the way Hippocrates speaks of those we would call chiropractors, so far as their views of the mechanism of the spine is concerned, and we see it also in the readiness with which Galen accepts (5e) the "dislocation of the vertebra dentata" in cases of laryngeal dyspnœa.

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Medicine According to the Talmud

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INTRODUCTION

The Talmud is a commentary on the Bible, and also an encyclopedia. It includes snatches of jurisprudence, history, morals, ethics, mythology, astronomy, mathematics, philosophy, theology, medicine, anatomy and botany. It was compiled by a number of Jewish scholars as a tradition transmitted orally for centuries and at the end of the fifth century was finally cast into definite literary form as a collective labor of many generations. It contains six portions (called Sedarim), sixty-three treatises, and 524 chapters. The whole work fills 2,947 folio leaves. The language of the Talmud is Aramaic or Chaldee, but the additional matter is principally in Hebrew. The text on the single pages is kept uniform with the previous editions to facilitate the use of references.

Some of the Talmudic sayings and statements have not the consensus of Talmudic opinion, but merely represent an individual view. Many modern philosophical theories, hypotheses about physics, chemistry, anatomy, astronomy, and medicine are often found in the Talmud. For example, what is now known as the Darwinian theory of the origin of the human species was previously discussed in the Talmud. Rabbi Judah said: "Man was created a live animal with a tail, but it was removed on account of his honor." As a religious man he saw in God's creation of man the highest form, and therefore his solution bears a religious seal and character.

Much attention was given by the Talmud to medicine, to study of principles and theories which were later discussed by the modern scientists and clinics. The erudition and sagacity of the rabbis was great and they evolved a system of treatment and hygiene which in scope and excellence stands far above the period of civilization in which they lived.

The wealth of Talmudic medicine is best revealed when it is compared with the methods of modern medicine. Everyone who is in touch with therapeutic literature will have a conception of the multitude of new methods of treatment which are brought forward, some of which prove valueless, but many of which are exceedingly useful. In addition to new methods, a constant modification of old ones occurs, showing an increase in their efficiency. The methods of treatment applied by the Talmudists are worthy of study. Many views of the ancient Talmudic physicians, hygienic rules and methods of treatment have a certain scientific value.

PATHOGENESIS ACCORDING TO THE TALMUD

In the Talmudic epoch the people regarded disease as a punishment of God for sins. All epidemics called for repentance. They believed that babies died because of the bad conduct of the adults (1). Rabbi Jehuda Hanasi's calf was taken for slaughter. It ran for protection under Rabbi Jehudah's clothes. The rabbi said that it was destined by God for slaughter. The rabbi was therefore punished with a severe intestinal malady for a long period.

Later his maid wanted to throw out a small kitten, but he took pity on the animal and interfered. The Lord cured him, and the Rabbi recovered entirely (2). Death followed not from paralysis of the vital centres, but rather because the angel of death according to God's command took the soul by means of poison drops. The Talmud says: "There is pestilence in the city, so do not walk in the middle of the road, for the angel of death walks thereon" (3). By repentance and prayer one avoided the angel of death. Rabbah studied continually. When the angel of death received an order from God to bring Rabbah he

could not conquer him, because Rabbah's spirit was undefeatable. But in the moment when Rabbah stopped intellectual and spiritual activity and began to take care of his body, the angel of death took his soul (4).

The Talmud suggests that the causes of diseases are: excess, cold, wind, heat, climate, impure food, bad habits and uncleanliness (5). Unhygienic conditions were considered the principal cause of maladies. Rabbi Samuel says: "Uncleanliness of the head causes infection of the scalp and eyes; uncleanliness of the clothes produces discomfort and nervousness; uncleanliness of the body causes skin diseases and disability" (6). "When a stain is found on the clothes of a scholar he is worthy of the death penalty." "Maladies are prevalent in unclean places" (7).

Unripe fruits and contaminated water were recognized as dangerous and as etiological factors of many severe diseases (8). Overeating and impure food caused stomach disorders (9). "Three things cause the weakness of the body: fear, travel and sin" (10). "Worries and sighing wear out the human body" (11). "Hemophilia (abnormal tendency to hemorrhage) is hereditary" (12). "Overmental work and laziness produce neurasthenia and weakness" (13). Running and jumping are believed to induce certain diseases (14). The solution of continuity of the spinal cord brings limping; softening of the spinal cord causes tremor of the head (15). The Talmud regards minute organisms and insects as the causes of certain diseases. It is said: "There are many germs and insects." "The harm producing minute organisms are everywhere in abundance, if we would see them we could not exist" (16).

METHOD OF DIAGNOSIS ACCORDING TO THE TALMUD

The diagnosis of diseases was made on the basis of anamnesis, palpation, observation and sometimes by the application of physical and chemical reagents. They had a number of wonderful reagents composed of seven chemicals which served as a blood test (17). The diagnosis of stomatitis was made on the ground of the redness, swelling and tenderness of the inflamed area. The rabbis and the priests, the most educated and trained, were recognized as specialists in medicine as well. In cases in which the diagnosis was doubtful they isolated the patient for observation. The diagnosis of skin diseases was decided on the ground of the size, shape, temperature, exudation and color of hair of the sores. The clinical observation took from one to three weeks (18). The Talmud suggested that a thorough examination was necessary for correct diagnosis. "A physician who treated without examination brought harm." "A physician who heals for nothing is worth nothing" (19). "Even some of the best physicians may deserve punishment because of incorrect diagnosis and treatment" (20).

The Talmud considered that the prognosis of an illness depended upon the cause and location. Internal diseases were more serious than external (21). The most dangerous were: angina pectoris, meningitis, inflammation of spinal cord, and gallbladder disease, but they, however, had a mild course in animals (22). Heart trouble was recognized as a grave malady, because the function of all organs depends upon the heart (23). Open wounds were treated as a serious disease; cancer was considered dangerous (24). Eye diseases were also regarded as grave (25). Perforation of the heart, esophagus, stomach and volvulus were believed to be fatal, as was injury of the spinal cord (26). Atrophy or abscess of the kidney caused death, but extirpation of the spleen, ablation of the uterus and accumulation of transparent fluid in the kidney were not considered fatal (27). The Talmud said: "Rather any trouble than sickness of the bowels; rather any pain than pain of the heart; rather any disorder than a disorder of the head; rather any evil than a bad wife" (28).

HYGIENE ACCORDING TO THE TALMUD

The Talmud considered hygiene to be of the utmost importance. Cleanliness, bathing, proper food, regular life, isolation of infected patients, and prevention of contagious diseases were urgently advised. "Be careful of the flies near the contagious patient," said the Talmud (29). "The amputated organs of the contagious should be buried" (30). The patient suffering from leprosy is strictly isolated, and he should declare himself as afflicted. If one had been in close contact with a leper he was held under suspicion during the incubation period (31).

According to the Talmud, to drink water flowing through filthy places was forbidden on account of the danger of contamination (32). It was also forbidden to partake of a dish of water, wine or milk left uncovered because of the danger of a hidden snake entering and drinking the liquid, thus polluting it with snake venom or some poison (33). The Talmud, too, warned against living in a town where there were neither physicians nor bathing facilities (34). It advised washing the hands before each meal, and the lips and mouth after meals, to prevent diseases of the teeth and gums; but, as hygienic precautions would not be practised by ordinary people, the Talmudists assembled these beneficial measures as a code of laws, which has an impelling religious significance. Thus many ritual actions have their origin and basis in hygienic principles.

"The Torah is to take care of the public health and hygiene," said the Talmud (35). Heat and some drugs were used for disinfecting purposes. "Water suspected of containing germs should be boiled before drinking" (36). Rabbi Assi cured the shoulder of R. Abuhu by cauterizing the wound (37). "Do not keep money in mouth, and do not put any food in unclean places" (38). "Do not drink from unclean glasses" (39). "The clothes used in the kitchen might not be used in the diningroom" (40). "Unclean hands cause illness" (41). "If you taste the soup do not return the remains in the pot"' (42).

To prevent an offensive odor from the mouth plenty of fresh water to drink and frequent mouth washing were recommended (43). The food for eating must be fresh and prepared in cleanliness and in proper form for the purpose of digestion. Rabbi Eleazer says: "Do not live in a town where there are no vegetable gardens" (44). "Excessive sitting is harmful for the stomach; excess of standing, harmful for the heart, and excess of walking, harmful for the eyes; therefore one should arrange to sit, stand and walk in equal proportions" (45). Care of the stomach was considered the basis of health. "The food must be easily digested" (46).

In accordance with this rule the Talmud warns

against eating unripe fruits or some kinds of food difficult to digest. The Talmud discussed the historical fact that out of Sancheriff's forces, when he besieged Jerusalem, 185,000 men died in one night. Rabbi Simmon said that eating unripe fruits was the cause of their death (47). Some epidemics were explained by the Talmud as the result of the use of impure water. Drinking of pure water prevents stomach trouble. "Eat and drink less, and spend more on your home and clothes" (48). "Who eats slowly lives longer" (49).

The regulation of mealtimes was regarded as an important factor. "When one gets his breakfast at the proper time, he becomes healthy and active," says the Talmud (50). The Talmudists recommended having breakfast at a regular time, depending on the profession and the habits of the individual. The rabbis believed that the first hour of the day was the proper time for breakfasting for Lydians who were cannibals; in the second hour robbers were to eat; in the third hour heirs; the fourth hour was the proper eating time for people in general, the fifth hour for laborers, the sixth hour for scholars and from the last hour onward eating was like throwing a stone into a barrel, more injurious than beneficial (51).

Rabbi Chisda said: "A man who attends school, and has not sufficient bread, should not eat herbs, because it creates hunger. I myself have never eaten herbs, neither when I was poor nor when I was rich. When I was rich I ate meat and fish in place of vegetables." He said again: "A young pupil who lacks food should not eat a little at a time. He should wait until he can accumulate sufficient for a hearty meal, and then eat. When I was poor I never ate, until I could put my hand in the basket and find sufficient to satisfy my hunger" (52). "To eat and drink standing is harmful" (53). "Do not teach your son to eat meat and drink wine" (54). "Do not eat immoderately" (55). "Wine in small amounts is a remedy; in large amounts it is poisonous" (56). "The following seven objects are beneficial if used moderately and harmful if used excessively: travel, luxury, work, wine, sleep, warm water, and venesection for medical purposes" (57). "Green colowort, sea radishes, the water from sisin (a Syrian plant), the stomach, the uterus (of cattle), and the raw meat of a cow are good for all diseases" (58). "After meals it is healthy to take a short walk." "Do not speak during a meal, because the food can enter the trachea which is dangerous" (59). "Ten things are detrimental to the sick, viz., meat of an ox, fat, roasted meat, poultry, fried eggs, almonds, a haircut, a bath, cheese, and liver. Others add yet nuts and gourds" (60).

The Talmud teaches that the quality of food is more important than the quantity. Discussing the value of vegetables and meats, the rabbis made a comparison between two persons, namely, Pekach b. Remale and Cheskia. The former had used meat almost entirely, while the latter was a strict vegetarian. Nevertheless, Cheskia conquered Pekach b. Remale in battle, because Cheskia, who observed a moderate life, avoiding too much food, was slender, strong, and active, but the excessive meat only made Pekach b. Remale fat, weak, and slow (61).

The Talmud suggested that the food must be varied. Carbohydrates and vegetables were regarded as unsatisfactory, but together with fats they were recognized a source of energy, producing power (62).

Concerning different food values the Talmud pronounced as suitable milk, meat, fish, eggs and vegetables. According to the opinion of Rabbi Janai any food having the same weight as an egg, when its food values were compared, will be much lower in caloric standard than the egg itself (63).

(*To be concluded*)

An Historical Analysis of Laënnec's Scientific Work

CHARLES GREENE CUMSTON, M.D.
Geneva, Switzerland

(*Concluded from page* 390)

Laënnec was the first to study the disease from the right point of view and showed that the tubercles in the pulmonary parenchyma were the pathological elements of the affection. With the stethoscope and necropsies Laënnec developed the diagnosis of this disease and also showed that although in his day pulmonary phthisis resisted all therapeutical measures, there were some instances in which complete cicatrization of the lesions occurred followed by recovery from the disease which had until then been regarded as absolutely incurable.

The results of Laënnec's researches on tuberculosis naturally underwent certain more or less important changes, especially about the middle of the last century, which must be referred to. Laënnec believed that it was impossible to diagnose tubercles at their onset and it remained for my compatriot, Dr. James Jackson of Boston to show that when the pulmonary parenchyma becomes more dense on account of the presence of tuberculous changes the expiration which in the normal state is hardly sensible to the ear, increases in intensity and finally equals or may even conceal the inspiratory sounds. This sign was exceedingly important since it indicated an induration of the lung long before percussion could give any diagnostic information. This happy discovery of the Boston physician was greatly enhanced by Fournet who pointed out the difference of the duration between inspiration and expiration at the time when the tubercles began to develop. He studied these two physiological phenomena with great patience and in his book on the diagnosis of pulmonary tuberculosis will be found for the first time a complete description of the early diagnostic signs of the disease.

Under the term of harsh respiratory sounds (*bruit respiratoire râpeux*) he describes a phenomenon present when the tubercles are in a state of crudity and regarded this pathologic sound as a pathognomonic sign of their development.

In his *Reserches sur la Phthisie,* Laënnec gives descriptions of tuberculous ulcerations of the trachea, larynx and especially of the epiglottis. He was also the first to call attention to lesions of the gastrointestinal mucosa in this disease. He likewise formulated a rule that he considered absolute, namely, that when tubercles are found in organs other than the lungs, they will invariably be found in the pulmonary parenchyma.

Laënnec's researches on diseases of the heart are not as complete as those on the lungs and therefore are less important, but what he has written on cardiac pathology is done with the same perfection as his other contributions. He used the stethoscope for their diagnosis, but his efforts were not always crowned by success. Had Laënnec been alive at the time of the great discussion which took place in 1831, on the origin and cause of cardiac sounds it is more than likely that he would have been able to add much to the then obscure notions prevailing in respect of cardiac physiology.

As a pathologist, Laënnec, unlike Bichat, did not generalize. He was content simply to describe what he saw; he brought together and united in a single group anatomical changes having several things in common, but he invariably broke away from this system if great similarity was wanting between them.

From Laënnec's day to our own the treatment of diseases of the lungs has steadily progressed, thanks to diagnosis which is the essential basis of therapeutics and it is clearly evident that our thanks for this progress are first of all due to this great French physician.

Contributors to the Science of Medicine

Marie Francois Xavier Bichat

Bichat certainly is an outstanding example of the saying that "those whom the gods love die young." He died before he was thirty-one and had crowded into the ten working years of his life enough original investigation to ensure for him a place among the immortals of medical science.

Xavier Bichat was born on November 11, 1771, at Thoirette, in the department of the Ain. His father was a doctor of medicine of the University of Montpellier and to his instruction his son's early knowledge of medicine may be attributed. He had a brilliant career in arts. Bichat received his anatomical training at Lyons. At this period the study of surgery had come to the front, owing to the fame of Desault the great French surgeon of the day. To this study Bichat applied himself working under the chief surgeon of the Hôtel Dieu of Lyons, Marc Antoine Petit.

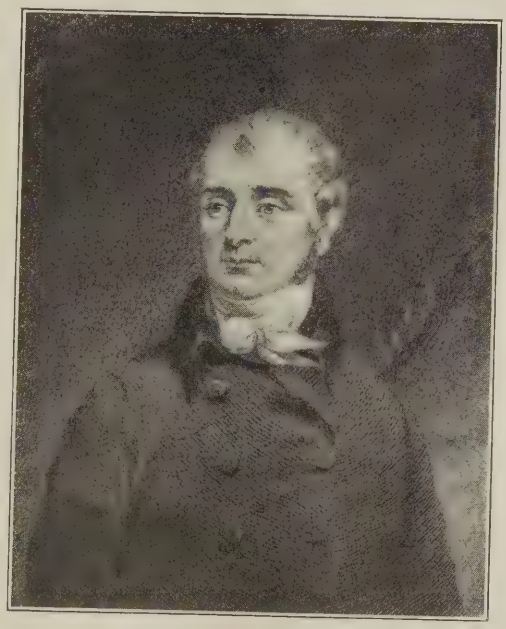
The revolution obliged Bichat to leave Lyons and he went to Paris where a larger field and one more adapted to his powers presented itself. In keeping with the trend of the times his views were directed to military surgery, and accordingly he attended the Hôtel Dieu of Paris and heard the lectures of Desault. A practice was established among the attendants of this surgical course, that pupils were selected to make an abstract of the lecture of the day, which was delivered in the presence of the second surgeon.

An accident in a great measure determined the future fortunes of Bichat. The pupil being absent whose turn it was to deliver the abstract of a long and important lecture on fractures of the clavicle, Bichat offered to take his place. He was blessed with a wonderful memory, and the purity of his style, the precision, the clearness of his ideas, the scrupulous exactness of his conclusions announced the born teacher rather than the student. Desault heard of the lecture and became acquainted with Bichat. So greatly was Desault impressed with him that he immediately offered to direct his studies, to receive him into his house and to treat him as a son. The foundation for Bichat's reputation was thus laid. Desault took him everywhere, to his public and private patients. Bichat became not only an assistant in his operations, but was also engaged in helping his chief in his literary work.

Desault died very suddenly in 1795 and Bichat was left to depend upon his own resources. In the winter of 1797 he commenced his career as a lecturer, and, not calculating upon a large class he restricted himself to a small suite of chambers. He had not even a dissecting room; he confined himself to simple demonstrations but in these his physiological views developed so rapidly that he determined to give a course of operations at the end of his anatomy lectures, a very unusual proceeding at that time and only undertaken by the most practised surgeon. His success, however, well justified the experiment, but the labor attending these exertions affected his health so severely that he suffered from a severe attack of hemoptysis. Nothing daunted, on partial recovery, he established a theatre for dissections, which was attended by more than eighty pupils.

Bichat then resolved to work out a system of anatomy founded on the observation of M. Pinel that disease consisted in the alteration in the tissue of an organ. This theory appears to have given to Bichat the idea of studying anatomy by a separate consideration of those structures which enter into the formation of the different parts. Up to this time the membranes had not formed any special subject of investigation; they had been examined and described

in connection with the different organs, but never independently of their association with other parts. From the days of Haller to the time of Bichat the whole of the membranes had been referred to a common origin, the cellular membrane. Bichat recognized that however true in a general relation this arrangement might be, yet upon examination it was found to be under various conditions quite erroneous. He was the first author who ventured to treat of the subject under more various and particular points of view. Anatomy, physiology and pathology have all advanced by the work of Bichat and it has been said that many of the improvements in these departments of science are in some degree attributable to the researches and classifications of this very able philosopher. His views on this subject have been published in a distinct treatise entitled *Traite des Membranes,* the first edition of which was published in 1800. The second volume of the *Mémoires de la Société Médicale d'Emulation,* of which society he was an active member, contains his early papers on this subject. Three other memoirs by Bichat are inserted in this volume: the first on a new trepan, so arranged as to raise or depress the crown at pleasure by means of a screw; the second, on the impossibility of any displacement occurring when the humeral extremity of the clavicle is fractured; and the third, on a new manner of removing polypi by the ligature.



Marie Francois Xavier Bichat

Bichat also was an original and earnest worker in physiology and published his views in the *Recherches Physiologiques sur la vie et la Mort,* and in the *Anatomie Générale* he put down his views of a new system of anatomy. This was followed by a system of descriptive anatomy. Then an edition of the works of Desault, with many editions by the editor.

In 1800 Bichat was appointed physician to the Hôtel Dieu. He was indefatigable in examining the bodies of those who died under his care and under the care of his assistants and is said to have examined more than six hundred bodies during one winter. Materia medica also engaged his attention. He felt the necessity for classing medicines according to the influence which they exercised over the vital properties. He was assisted in this inquiry by no fewer than forty pupils who, under his directions, gave daily reports on their work, the progress of which was announced in a regular public lecture delivered by Bichat.

He died when in the midst of his fury for knowledge, a martyr to science, presumably as a result of an accident. He fell in descending a staircase at the Hôtel Dieu, was greatly bruised and sustained a slight concussion of the brain. He passed away on the fourteenth day after the accident on July 22, 1802, in the thirty-first year of his age.

Bichat fell a victim to his zeal for science and died when his reputation was at its height. His loss was regarded as national. When Corvisart communicated the intelligence of his death to Napoleon Bonaparte, then first consul, he remarked: *"Bichat vient de mourir sur un champ de bataille qui compte aussi plus d'une victime; personne en si pen de temps n'a fait taut de choses et aussi bien."* Ten days later the government caused his name to be inscribed, together with that of Desault, on a memorial erected at the Hôtel Dieu in their honor.

The life of Bichat has been written by Muisson and by Husson. An historical notice has been published by Pinel. Hallé delivered a eulogy before the Faculty of Medicine in Paris. Wrapped up in a consuming desire for knowledge, medical science was father, mother, and family to Bichat. Like many men of genius he seems to have been urged on by some inherent power over which he had no control, always searching for a goal which was never quite reached. In the few years that he worked to this end he added something to the sum of scientific knowledge and blazed a trail to point the way to others.

Bichat was of a very amiable disposition and was beloved by his colleagues, his students and all with whom he came into contact. He is said to have been a stranger to every and all of the baser passions. He was devotedly attached to his father. He was of middle height and while his countenance was agreeable it was distinguished chiefly by piercing and expressive eyes.

Bichat's head was very remarkable and Cloquet in *Traité d'Anatomie* has given a representation of his skill as a specimen of the Caucasian variety of the human race. In form it is singularly irregular, the left side projecting much beyond that of the opposite side. The sutures are also irregular, and the defect of symmetry is as evident in the interior as it is on the exterior of the skull. The forehead is particularly large and capacious.

The works of Bichat have been translated into various languages, and have gone through many editions.

Rima and the Surgical Cure of Varicose Veins.—Senator D. Giordano, in an address before the Third Congress on the History of Italian Medicine, made an interesting study of the theory of Rima on varicose veins. The surgical cure of varicose veins dates from the remotest antiquity, but is was almost forgotten when Rima, in the course of inspecting a hospital at Pavia in 1806, had occasion to examine a convalescent patient operated on by Cairoli, after the method of Home "for varicose veins of the leg by ligature of the saphena in the region of the articulation of the knee." He immediately put into practice this theory and in 1807 had operated on thirty-eight patients, with a loss of only three.—*Æsculape.*

Editorial Articles

SOME OLD VIEWS OF MEDICINE

In spite of the fact that the knowledge and practice of medicine of our forefathers was largely empirical, they possessed probably a practical and clinical knowledge of disease which they carried into effect not surpassed even if it is equalled by the practitioners of the present generation. Their knowledge was based on bedside experience and although their treatment, therapeutic and otherwise, was rough and ready, on the whole they reached successful results.

At one time bloodletting was part of the routine of general practice and it is likely that until it was abused the outcome was satisfactory. In the days when the men were large meat eaters and heavy consumers of alcoholic beverages, when acute gout was one of the most common diseases and high blood pressure and cerebral lesions occurred with comparative frequency, it was, perhaps, common sense practice to use venesection occasionally.

However, the practice was carried to excess and for quite a considerable period was the medical fad or obsession. Carried to the extent that it was some two hundred years ago bloodletting killed its tens of thousands. As Dr. J. D. Comrie points out in the *Glasgow Medical Journal,* November, 1925, this pernicious doctrine developed from Harvey's discovery of the circulation of blood and especially from the investigations of Boyle and those who showed that combustion and respiration were virtually the same process. This was the *phlogiston* theory advanced by Stahl at the end of the seventeenth century. This theory consisted of the idea that when a material wasted away in burning it gave off a hypothetical substance—phlogiston. In fever when this substance was apparently not escaping from the lungs quickly enough what was more reasonable than to get rid of it by removing it with the blood. Hence the process of bloodletting which had been moderate in ancient and medieval times, suddenly in the eighteenth century increased to alarming dimensions and continued to rule medical practice up to the middle of the nineteenth century. One of the most celebrated exponents of this method of treatment was Dr. Lettsom, who founded the Medical Society of London. He bled for every disease, including tuberculosis, and was so firm a believer in the merits of bloodletting that he is said to have hastened his own end by frequently bleeding himself when suffering from a wasting disease.

The most exquisite satire on this old time medical obsession was that of Le Sage in *Gil Blas* who makes the great Dr. Sangrado say, "Without more ado I will initiate you in the healing art of which I have been so many years at the head. Other physicians make the science to consist of various unintelligible branches but I will shorten the road for you and dispense with the drudgery of studying natural philosophy, pharmacy, botany and anatomy. Remember my friend that bleeding and drinking warm water are the two great principles, the true secret of curing all distempers incident to humanity." The custom of bloodletting went out suddenly and so great was the reaction against the practice that it was discarded entirely. As said before, it possesses some virtues when employed judiciously but as employed in the eighteenth century supplies a remarkable instance of how far a medical obsession and public credulity can go.

ADULT CHILDISHNESS

Two physicians, Dr. Joseph Collins and Prof. D. Fraser Harris, of Dalhousie University, have had it on their minds that modern adults are exceeding childish. Each expresses himself on the subject, and the articles appeared the same month of the same year, one in an American monthly, *Scribner's,* and one in an English review, *The Contemporary.* One bit of evidence is given by both (the season for straw hats), though otherwise there is no sign of collusion, and, doubtless, each was surprised on seeing the other's production. All things come in twos, as he who has served as hospital intern knows full well.

Physicians see much of humanity behind as well as in front of the scenes, and when two of them feel so moved to say something not very complimentary about their fellows, there must be good reason.

Of course we are all more or less grownup children. With one foot in the grave, we still have one in the cradle. We kick up considerable dust with our clumsy adult feet, but there ought to be some slight trace of the cloud of glory with which we arrived. We need to be childlike to enter the kingdom of heaven, though there is considerable difference between childlikeness and childishness.

Fraser goes to the bottom of his subject when he defines childishness as mental immaturity and, in particular, "the incapacity to grasp the universality of the doctrine of cause and effect. The *post hoc* is everywhere mistaken for the *propter hoc,* and this not only among the uneducated masses but among those whose training should have disposed them to think otherwise. The persistence of superstition in the life of today i

due mainly to two causes, one the receptivity and suggestibility of minds which have never grasped the meaning of causation, the other the perpetuation of the superstitious themselves through the working of racial psychic momentum."

This childishness has constantly to be dealt with by the physician and the public health worker. "It expresses itself even to those highly educated people who walk about with an iron ring around a finger or a raw potato in their pocket to ward off rheumatism, or who believe that a piece of red flannel has much more efficacy than a white one tied round the neck for sore throat." "One expression of childishness in adult life which may actually be a serious menace to the welfare of the community is the activities of the antivaccinators. This particular form of childishness is that these people are unable to appreciate the import of the historical and statistical evidence in favor of vaccination against smallpox. The antivaccinators do not believe that the question whether there shall or shall not be universal vaccination is one for the medical expert, and not for the layman at all. These antivaccinating members of the laity are impervious to evidence, and are constantly making mistakes about cause and effect. They are the present day representatives of that class of persons who throughout the ages have opposed everything new. Edward Jenner was by no means the only promulgator of a discovery who suffered opposition and misrepresentation, for Galileo, Harvey, Simpson, Semmelweiss and Lister were all, at first, at least, ridiculed, thwarted, and opposed. This form of childishness, as an expression of social psychological inertia, may be a very serious thing for the public health. Possibly some of the leaders of antivaccination are neducable, which is an expression of physiological nertia."

THE RENAISSANCE OF VITALISM

In a most comprehensive article F. Poncetton (*Revue Universelle*, September 1, 1925) presents an riginal critique of Pasteur's theories which have eached their phase of decrepitude, after having iven wonderful results, and puts forward new views n the domination of the nervous system over cells nd tissues. His remarks on cancer should cause one o meditate and to search for other etiological factors nan the microbe. Our twentieth century science has tained the sanctimonious and silly character of the ineteenth century. That the microbic conception aplied to the majority of diseases is at present far too mple is evident in the minds of many and contemprary research work exclusively devoted to serums nd vaccines has unquestionably paralyzed work in her domains of the highest importance.

Vital influx is at present regarded as much more important than in Pasteur's day; we are only just beginning to catch a glimpse of the as yet immense unexplored field of action of the sympathetic and pneumogastric systems and their ganglia, of the blood, lymph, internal secretions and differentiated tissues. Poncetton points out that the body is to be regarded as a city composed of differentiated cells to which the negative nervous system furnishes their vital force, which penetrates each individual cell and governs with marvellous delicacy the entire human machine. The intricate workings of the body remain a physiological mystery composed, as they are, by an accelerating apparatus—the sympathetic—and an apparatus of restraint—the pneumogastric—with ganglia each with its individual life, alliances and antipathies. Finally, surmounting this vegetative edifice which is necessary for it, although it does not obey it, there is the brain which is in relation with the external world by the organs of the senses, thus allowing the individual to construct that imponderable conception, namely human reason. This dissociation of life has in all times been perceived; it will explain the medicine of tomorrow and it can now be affirmed that the twentieth century will be the period of vegetative physiology. It will be by the study of the antagonistic forces—the sympathetic and pneumogastric, ganglia and organic plexuses—that clinicians of tomorrow will create a logical science of disease. Contemporary medical science has its objectives, but it has no starting points, and this is due to the special scientific fetishism at present holding the medical profession in its grasp.

SOME OF THE NERVOUS AFTEREFFECTS OF INFLUENZA

The nervous aftereffects of influenza are many. Of course, influenza has a marked predilection for the nervous system and is responsible for bringing into activity its latent defects. Dr. Smith Ely Jelliffe has appeared to lean towards this view. Encephalitis lethargica, commonly known as sleeping sickness, and poliomyelitis, commonly known as infantile paralysis, are but manifestations of the action on the nervous system of the germ or germs on whatever the causative factors of influenza may be. Dr. F. W. Crookshank, of London, is the chief protagonist of the theory that encephalitis lethargica and poliomyelitis are owing to influenza and many medical men of repute hold a similar opinion among these being, to some extent at any rate, Tarozzi and Rosenow of the Mayo Clinic.

The synthetic view then is that encephalitis lethargica represents a nervous form of influenza that tends to occur in older and epidemic poliomyelitis a like

form that is more frequent in younger patients. Moreover, this conception affords a basis for a rational plan of treatment which has proved successful in practice. In order properly to grasp the significance of this, Dr. Crookshank refers to an old time theory and practice that unless there was sweating or free diuresis in fever or if the rash did not show in certain fevers it boded ill for the patient. When distillation was suppressed nervous troubles were apt to arise, paralyses, lethargies, deliriums, psychoses, and disturbances of special senses, indeed the whole gamut of the manifestations of encephalitis lethargica and poliomyelitis was displayed. Not only did the sixteenth century doctors believe this, but they founded their practice upon the belief and it appears with success. It seems, therefore, as if, no matter what the particular virus to which the condition is owing or chiefly owing, there is in certain disorders a sort of balance between the vasomotor conditions of the central nervous system, on the one hand, and the skin and mucous membranes and viscera on the other. Dr. Crookshank and his colleagues at two London hospitals have had considerable success in treating these conditions, since the outbreak of influenza in 1918, by the addition of urotropin, salicylate of soda and benzoate of soda to the diuretic mixture. It is no doubt required in the treatment of such nervous disorders that diuresis be free and that the urinary tract be disinfected. Urotropin has a remarkable, selective affinity for the central nervous system, exhibited by its rapid appearance in the spinal cord after administration.

TOXICOMANIA IN ANIMALS

It is a question whether or not man is superior to his socalled inferior brothers. It is true that the present theory admits that human intelligence and that of animals—if they be accorded one—differ, not only in degree, but in essence, hence no comparison is possible between the acts of man and beasts. It might be supposed that man only had vices, but there are typical examples of animals who occasionally know the joys of alcohol, as well as the disadvantages resulting from the ingestion thereof. When man makes a beast of himself he usually has no success, and when an animal imitates man, it derives few advantages.

One recalls the story of the ass, related by Zola in *La Terre*, who would drink a tub full of newly pressed wine and then in its inebriety rolled in ecstasy upon the grass. It is probable that this is an authentic fact.

A competent veterinary surgeon, Dr. Bissange, has contributed a long article on alcoholism in farm animals in which he considers the causes, symptoms and degrees. He considers alcoholism in domestic animals rare, because exceptional circumstances must be present for sufficient doses of alcohol to be ingested to cause alarming symptoms. Horses and dogs are usually more susceptible to the influence of alcohol than cattle, but, speaking generally, the impression produced in animals is far more intense than in man. As to chronic alcoholism, Dr. Bissange has never encountered a case in domestic animals.

Some sailors of the Hudson Bay Company once captured a young white bear, who in its captivity willingly entered into the pleasures and sports of its masters. Among other things the animal was particularly fond of grog and became inebriated with deplorable frequency. Upon a certain occasion a sailor gave the animal an overdose and it instinctively went to bed in the sailor's bunk to recover.

Considering now animals observed in liberty, we know the reputation of vine thrush, which becomes inebriated to the point of losing its reason. But special importance is to be attributed to the studies of Wasman, Powell, Oberthür and Bouvier on ants. In them alcoholism is a factor of disheartening social conditions. It is known that some species of ants give refuge to plant lice who serve them like cattle and furnish their hosts with a kind of fermented honey, and, better still, it would appear that certain other guests—Atameles and Lomechusæ—bring up their families in ants' nests and in order to keep in the good graces of the latter in order to get the fermented honey they secrete, the ants take upon themselves the feeding of this foreign progeniture and, as it is voracious, the ants give them the sexualized royal larvæ to feast upon, so that the perpetuation of the race is very much compromised.

The facts seem to show that a kind of toxicomania exists in ants. Wasman also observed that the ants, after having licked up the fermented honey secreted by the undesirable guests, became so excited that their condition resembled an excess of alcohol or ether in man. They also show that in animals as with humans a certain degree of civilization is necessary for these deplorable collective vices to extend by contagion.

Lockwood Kipling has stated that felines, especially tigers, inhale tobacco smoke with great content and an authentic story is told of a young Japanese macaco belonging to a young Japanese woman (who was both a morphinomane and cocainomane) who developed the habit of snuffing cocaine. He progressively increased his doses of the poison and developed all the symptoms of human amateurs of artificial paradise. Finally his mistress went to a sanitarium for a cure and the monkey accompanied her and, taking a cure as well, he recovered from his cocainomania; to such an extent was his cure complete that he ever afterwards refused to sniff the drug.

THE PHARMACOPŒIA

The United States Pharmacopœia has had its tenth overhauling and with notable results. Nearly two hundred articles have been dropped and something like forty added. We do not know how many articles there were at the beginning of this revision, but we are reminded of the old intelligence test in regard to the frog in the well who climbed up two feet during the day but slid back one foot during the night. He got out all right and it looks as if the medical profession, at its present rate of progress, which, if we know any arithmetic, beats that of the frog, is likely sometime to reach that high but very narrow plane of therapeutics set by Dr. Holmes. We have certainly made good headway since his day.

Some of the things thrown overboard deserve a passing sigh or even a tear. There was a day when arnica was essential to the comfort of not a few, and a poultice of humulus has saved many a patient. Trochischi potassi chloratis is dear in our memory, for they were dispensed, along with other candy, by our druggist, and we bought them by the handful in preference to, or as a change from, peppermint or wintergreen lozenges. We should, of course, have been poisoned and have died, but we were none the worse. Sassafras must descend from "official" life and seek simpler company, though it was ever the best of spring remedies and has cleansed the blood of countless thousands.

Among the additions we are surprised to note our friend of questionable company—spiritus frumenti, but circumstances alter cases. He has entered exclusive circles.

There have been a number of changes of official title. Hypophysis sicca is now to be known as pituitarium, and balsamum tolutanum is to be styled simply tolu. Shall we know them under these brief titles? Serum antitetanicum purificatum becomes antitoxinum tetanicum. Liquor calcis is now liquor calcii hydroxidi and pilulæ catharticum compositæ is become pilulæ hydrargyri chloridi mitis compositæ. Some are less, some more, formidable in their new official regalia, but isn't this language all tomfoolery either way? Why not compound cathartic pill, tetanus antitoxin, lime water, etc., instead of the attempt at display of linguistic learning which we do not possess nor need, though it was possessed and was necessary a hundred or more years ago.

The first effort at improving the medical curriculum should be the abolition of the use of Latin in writing prescriptions, and, while this can be done without altering the dignity of the Pharmacopœia, that Latin bible would probably be then translated into the vernacular. Verily the priest has made more progress than the physician in some ways.

Obituary.

ARTHUR ROBERTSON CUSHNY, M.D., LL.D., F.R.S.

Edinburgh

Dr. A. R. Cushny, professor of materia medica and pharmacology at Edinburgh University, died very suddenly at his home in Edinburgh on February 25th last. He was as well known in this country as in his native land as he had spent a considerable part of his working life here where he also did much of his valuable scientific investigations into pharmacology and therapeutics.

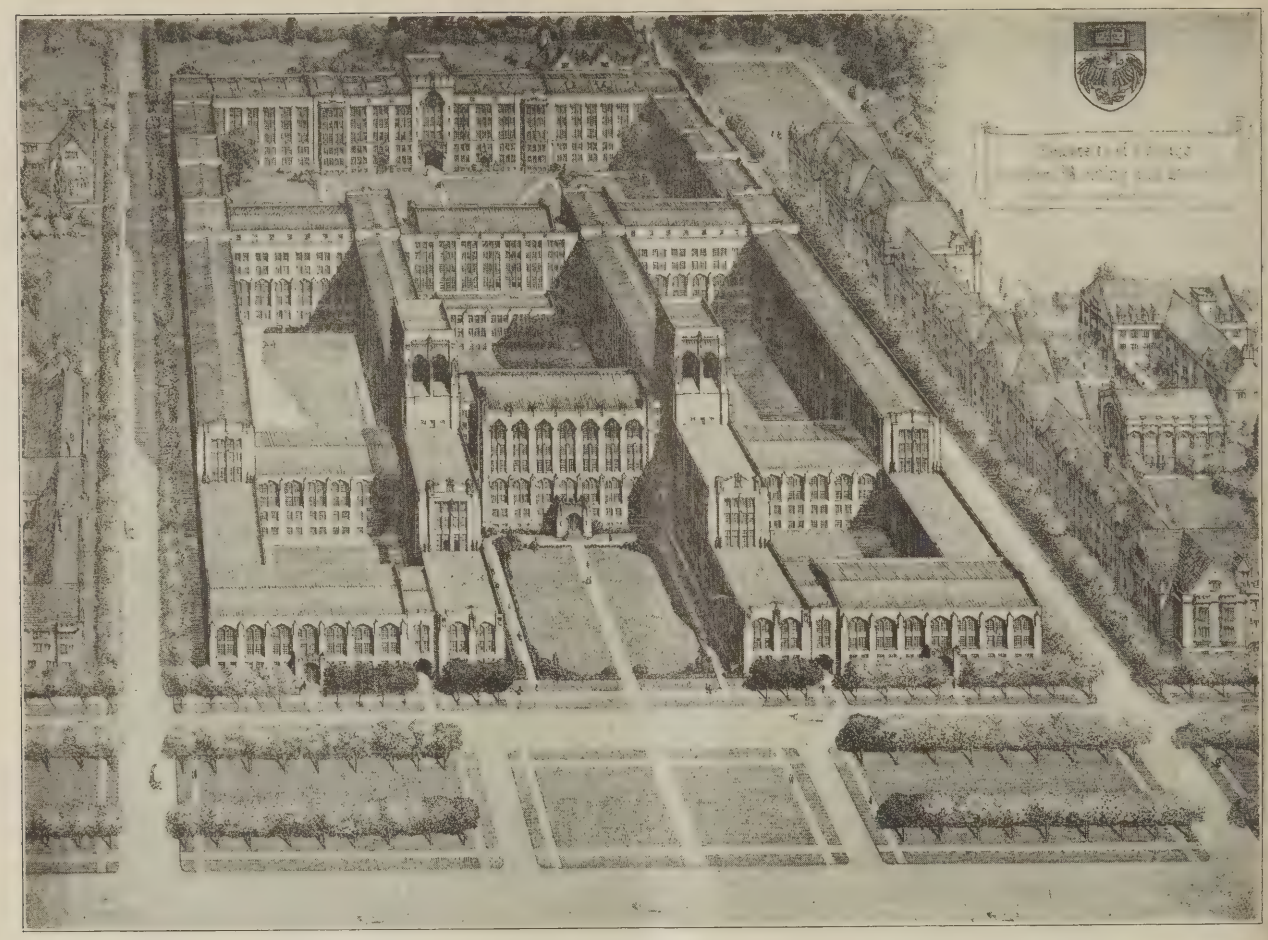
Dr. Cushny was born in 1866, the fourth son of the late Rev. John Cushny, of Speymouth, Morayshire, Scotland. He was educated in Aberdeen where he had a distinguished career as a medical student, graduating in medicine in 1892. He studied also at Berne and Strassburg and in 1898 was elected professor of pharmacology in the University of Michigan at Ann Arbor, which post he held for twelve years when he was appointed to the chair of materia medica and pharmacology in the University of London. He remained in London until 1918 when he succeeded Sir Thomas Fraser as professor of materia medica and pharmacology in the University of Edinburgh.

Among the contributions which Cushny made to the knowledge of pharmacology was the analysis of the mode of action of digitalis upon the heart. He was the first to do this and after establishing the general principles by animal experimentation, in collaboration with his friend, Sir James Mackenzie, carried out a series of clinical investigations and demonstrated the effect of the drug on the heart. This work which was fundamental formed the basis for important researches by Sir Thomas Lewis and others who have cleared up many of the obscure features of heart disease during the past few years. Professor Cushny also did some excellent pioneer work on diuretics and introduced the first coherent theory of the manner in which the kidney acts and which is in accord with the most modern knowledge of physical chemistry.

Dr. Cushny by reason of his life work, exercised a profound influence on the development of pharmacology both in Great Britain and in this country. His great influence was due largely to his textbook, *Pharmacology and Therapeutics and the Action of Drugs,* which was the first comprehensive textbook to be published and which now in its eighth edition still holds the pride of place in this field.

Dr. Cushny's whole influence was directed towards making pharmacology an exact experimental science which would serve as a foundation for the art of therapeutics. He contributed frequently to medical scientific literature and in his later years was joint editor of the *Journal of Pharmacology and Experimental Therapeutics.* His last written work is to be found in a series of lectures given in 1925 under the Charles E. Dohme Memorial Foundation at Johns Hopkins University.

Dr. Cushny was essentially an original worker and a pioneer and established pharmacology on a scientific basis here and in Great Britain. In Edinburgh he built up a great school of pharmacology.



Rush Medical College

An Epitome of American Medical Progress

MAX THOREK, M.D.

Chicago, Illinois

To write of Rush Medical College is to write of Chicago, for the spirit of Rush Medical College is the spirit of Chicago, or, rather, the broader American spirit of liberty and progress. In no American was this spirit more manifest than in the illustrious man whose name this famous college bears. A man preeminent in his profession but even more preeminent in his love of country and one who has left his immortal signature on our Declaration of Independence.

A few words of introduction in regard to Benjamin Rush will not be out of place in speaking of Rush Medical College. Benjamin Rush was born in Philadelphia in 1745. He went to Edinburgh in 1766, obtained his M.D. degree in 1768, then went to Paris and returned to Philadelphia in 1769. He was successively professor of chemistry and of theory and practice of medicine in the Medical College of Philadelphia, and, in 1791, was created professor of the institutes and clinical medicine in the new University of Pennsylvania.

Rush was, however, even more prominent as a patriot. Probably no one outside of Washington was better known and appreciated throughout the country. Among the physicians of his time he stands easily foremost. His character is summed up in Jefferson's letter to John Adams, in which he says: "A better man than Rush could not have left us, more benevolent, more learned, of finer genius or more honest."

Of Rush's many important literary contributions to medicine the best known is his *An Account of the Bilious Remittent Yellow Fever as it Appeared in the City of Philadelphia in the Year 1793.*

No better name than that of one who combined love of independence with the spirit of research could have been chosen for a medical college; and the history of Rush Medical College since its inception is fully in accord with the spirit of its patron. To me, as an alumnus of this college, it is a special pleasure and privilege to furnish this short sketch of its work.

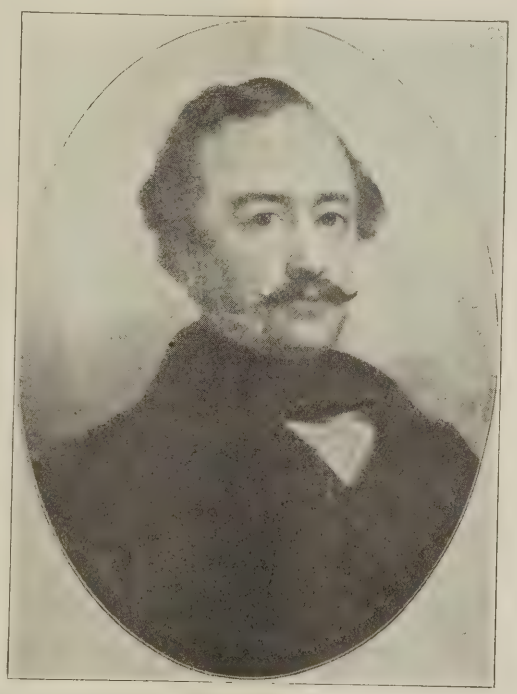
The idea of founding Rush Medical College in Chicago originated with Dr. Daniel Brainard who, not only because of this but for many other reasons, must be regarded as a pioneer in American medical progress and a conspicuous figure in American medicine because of his personal achievements. Brainard was born in New York State in 1812. In 1834 he received

his M.D. degree in the Jefferson Medical College of Philadelphia and settled for practice in the then outlying and distant, but rapidly rising, town of Chicago. In 1836 Brainard, in conjunction with G. C. Goodhue, of Rockford, Illinois, petitioned the Illinois Legislature to grant a charter for a new medical college in Chicago, to be known as Rush Medical College. The charter was granted in 1837, the first educational charter of any kind granted by the Illinois legislature, but owing to financial and other difficulties nothing was done in the way of starting operations until 1843. In that year the first faculty was chosen, and consisted of Brainard himself as president and professor of surgery; Dr. John McLean, professor of the theory and practice of medicine; Dr. M. L. Knapp, professor of obstetrics and diseases of women and children, and Dr. James V. Z. Blaney, professor of chemistry and materia medica. Dr. McLean came from Jackson, Michigan, and Dr. Knapp from Waynesville, Indiana.

The humble beginning of the college was made in two rented rooms in the Saloon Building at the southeast corner of Lake and Clark Streets. The requirements for the degree of M.D., according to the first announcement of 1843, were three years of study with a reputable physician, with two courses of lectures in Rush Medical College, or one course of lectures with two years of practice. Twenty-two students attended the first course of lectures.

The broad, prophetic vision of the founder, however, was in no way dimmed by the smallness of this beginning. His belief in his own ability to build up a great institution, and his clear foresight of the glorious future of Chicago, are reflected in his introductory address in opening the first class, on December 4, 1843, in which he stated that he believed the school opened that day was destined to rank among the permanent institutions of the State, and that it would be identified with the interests of a great and prosperous city. Today, indeed, Brainard's prophecies are more than realized. Without endowments, without patronage, with but little financial or other aid except the indomitable punch and "I will" spirit of its founders and their successors, Rush Medical College has become the nucleus of the medical school of one of the greatest universities of the world, and bright as have been its achievements in the past they may be expected to pale before the dazzling brilliancy of what may reasonably be expected from the future.

With the generosity and public spirit which has always characterized the citizens of Chicago, those of that day purchased a lot at the corner of Dearborn and Indiana Streets, and on this site, in 1844, the first Rush Medical College of Chicago was erected at a cost of about $3,500.



DANIEL BRAINARD

This building was humorously called "the rat trap" by the students. The celebrated Austin Flint gave lectures in this building, as professor of the institutes and practice of medicine, as well as Dr. Nathan S. Davis, who took the chair of physiology and pathology in 1849.

The growing city and the rapidly increasing number of students soon called for increased accommodations, and in 1855 the college was enlarged to a capacity of 250 students, at a cost of $17,000.

The clinical needs of the school were not neglected. Indeed, Dr. Brainard, whose specialty was surgery, had paid particular attention to this branch of the college teaching. Soon after his arrival in the city he opened a private hospital in Rush Street. The old Government Hospital of the Lakes had passed into the hands of the Sisters of Mercy in 1851 and was known as the Mercy Hospital. Both of these furnished clinical material for study by the Rush students.

In 1857 Dr. William Heath Byford, of Evanston, Illinois, became professor of obstetrics and diseases of women in the college. The event is of importance for progress in surgical gynecology is almost peculiarly American, and Byford's name is indelibly associated with much of that progress. The Rush Medical College was naturally a focus for the dissemination of his ideas of the newer gynecology. Dr. Byford, however, with Dr. Davis and others, separated from the Rush Medical College in 1859, to form the medical department of the Lind University, the Chicago Medical College, afterwards to be known as the Northwestern University Medical School. This separation occurred because of a divergence of opinions in regard to the methods of teaching, but in other respects mutually cordial relations have always existed between the two medical schools.

The Civil War affected Rush Medical College only in its clinical teaching. For this material the college had in recent years to depend chiefly upon the City Hospital, which during the war was commandeered by the government as an eye and ear hospital. After the war the hospital passed into the hands of the Cook County authorities and became the nucleus of the present Cook County Hospital.

A most important event to the college was the death of its founder, Dr. Brainard, in 1866. He was the most conspicuous medical figure in the Northwest, an original investigator in bone surgery and the use of iodine in surgery, and had been elected a member of the Surgical Society of Paris, and of the Medical Society of Geneva, Switzerland. Brainard had made the teaching of surgery the most prominent feature in Rush Medical College, a feature which has continued down to the present date. He was succeeded in the chair of surgery by Dr. Moses Gunn, who maintained

and furthered the high standards established by Brainard. As the school progressed, Dr. Charles Parkes became associated with Gunn in the surgical teaching, after fifteen years devoted to the teaching of general and surgical anatomy.

In 1867 an entirely new edifice was erected on the

Rush Medical College in 1876

site of the old college, at a cost of $70,000. This building and its valuable contents were entirely destroyed by the great Chicago fire of 1871, and the college existed only as a legal entity. Chicago, however, has never been daunted by calamity. Three days after the fire classes were resumed and the Rush medical students listened to their lectures in a hall placed at their disposal in the old County Hospital. The Chicago Medical College kindly gave the use of its dissecting room. Because of the out of the way location of the old college in regard to the hospitals, it was decided not immediately to rebuild the college but to await developments regarding the location of the new Cook County Hospital. In the meantime a temporary brick structure, with a tar roof, was built, part of it under the sidewalk, on the grounds of the old hospital. This was the celebrated College under the Sidewalk, or Eighteenth Street Tabernacle. It cost only $4,000 and lasted four years, until the new college was opened. It contained both an amphitheatre and a laboratory.

A site was selected and purchased in 1875 for the new Rush Medical College opposite the newly built Cook County Hospital, at the corner of Harrison and Wood Streets. This site and building cost $75,000, chiefly contributed by the faculty.

The new building was planned to give all necessary accommodations and every improved facility in the teaching of medicine and surgery. Dr. Grossheim, the Surgeon General of the Prussian Army, who visited it, pronounced it the best building for its purpose of any he had examined. Dr. Joseph W. Freer was the president of the college at this time.

A digression might be made here in regard to the surgical clinics in Rush Medical College. The work of both Brainard and Gunn has already been mentioned. Gunn was succeeded in the surgical professorship by Parkes, whose knowledge of anatomy gave great eclat to his surgical demonstrations. But the surgical clinic of Rush attained its zenith during the professorship of Nicholas Senn. Senn had been teaching the principles of surgery in the college from 1888 to 1891, but in the latter year he left his home in Milwaukee to fill the chair of clinical surgery vacated by Parkes. Senn's book, *The Principles of Surgery,* had completely altered the surgical mind of America. Indeed, it is still a standard and no man since Senn's time has left a deeper impression than he created in the surgical practice of the day. Senn was a rapid and accurate diagnostician. As a lecturer he had a wonderful facility for bringing the salient points clearly home to every member of a large audience. His famous clinics in Rush Medical College and elsewhere drew large audiences, many traveling long distances to hear his masterly discourses. In 1905 he became professor of surgery in the University of Chicago.

The other branches of the medical art received all the attention to which they were entitled. I need only refer to the gynecological clinics of Byford, the nose and throat clinics of E. Fletcher Ingals, the dermatological clinics of Hyde and Montgomery, Brophy's clinics on dental anatomy and pathology, besides a number of others, including the more recent night clinic in industrial medicine by Dr. Harry E. Mock, which was established in 1917, to make this fact apparent.

In 1893 an addition to the college was made by the erection of a five story laboratory building in Harrison Street, opposite the college building. Here Dr. Ludvig Hektoen, professor of pathology, gave instruction in gross and microscopic pathology. This was in line with the orientation towards laboratory investigation and diagnosis.

The Sons of Rush Medical College have nobly done their duty in the various wars of the United States. The records of the Civil and Mexican Wars were, unfortunately, destroyed in the great fire. Senn's name and work in connection with the Spanish-American War are well known. In the World War the *Bulletin* of the Alumni Association of the college, August, 1918, shows that about seventy mem-

Rush Medical College before the fire, 1871

bers of Rush Faculty were in active service in the field, and that about seven hundred of the alumni of Rush were enrolled in the Medical Corps of the Army and Navy.

Rush has given its diploma to more than five thousand graduates since its inception. The rolls contain such names as Byford, Fenger, Senn, Cotton, Murphy

and Etheridge among those who have passed on, and a host of distinguished living practitioners who are gloriously carrying out the ideals of their Alma Mater.

We now come to perhaps the most interesting phase in the life history of Rush Medical College, its affiliation with the great University of Chicago. The university was founded in 1891 by John D. Rockefeller and richly endowed, with William Rainey Harper as president. The amalgamation may be considered to have been initiated by Dr. Edward L. Holmes, who succeeded Dr. J. A. Allen in the presidency of Rush Medical College in 1890. Holmes had high ideals regarding practical and laboratory methods in the teaching of medicine. It was mainly through his efforts that students of Rush Medical College obtained their first two years' course, the preclinical course, in the Hull Biological Laboratories of the university, which were fully equipped and sufficiently endowed to provide full time teachers. This arrangement continued for many years, the final degree of Doctor in Medicine, however, being given by Rush Medical College. While Holmes urged the complete affiliation he found it difficult to convince Dr. Harper, whose first idea was that the medical school of the university should be of the graduate research type favored by many of the older European universities. Harper also believed that there might be difficulties in an old established institution, like Rush Medical College, cutting loose from its own traditions and adapting itself to newer ideals in teaching. But gradually Dr. Harper changed his views and the affiliation has been accomplished under his successor, Dr. Harry Pratt Judson.

The affiliation measures and contractural relations call for the establishment of a completely equipped and endowed undergraduate medical school, with a clinical hospital directly in connection with the university, the present Rush Medical College to be replaced by a new and larger edifice, and in connection with the Presbyterian Hospital and others, the Otto T. Sprague Memorial Institute of Infectious Diseases, and certain dispensaries, to form a Post Graduate Medical College and Research Institute, where every encouragement and facility will be afforded for the investigation of medical and surgical research problems and the clinical study of disease.

When the entire project is carried out, and funds for the purpose are now amply available, Chicago will possess what no other city in the United States possesses at present, both a high grade University Medical School and a properly organized and equipped school for the further training of physicians already in the field. What the university aims at is not the graduation of large numbers and turning them loose to swell the already filled ranks of the profession, but rather the better training of those specially selected as being best fitted for the work.

The undergraduate medical school will be situated, with its own hospital, on the south side and will give the full medical course, with the degree. The postgraduate medical school will be situated on the West side and will continue the glorious name of Rush Medical College.

The affiliation means that Chicago will become one of the most important medical centres in the world. Of course, money, energy and will do not make medicine, but there is no reason to suppose that Chicago will lack the brains necessary to make progress, or to attract to her those who have a problem to solve and seek the means of solving it. The World War has shifted the centre of medical and surgical science from Germany to the United States, and Chicago, being the geographical centre of the United States and the headquarters of its most important medical and surgical associations, may logically assume that its medical schools will rank as the most important in the world.

Great and glorious be the future of Rush, and may her light be a beacon unto all the world!

News Items.

Dormitory for Medical Students.—A ten story building for use of students attending medical and dental schools is to be erected in Chicago by the Y. M. C. A. There will be about three hundred and fifty rooms.

Extension Courses at Bad Elster.—Scientific extension courses for physicians will be held in June at Bad Elster, in the Saxon Mountains. The subjects will be general medicine, balneology, and the various cures offered at the institution.

Diabetes Research.—A trust fund of approximately two hundred thousand dollars has been created by the will of the late George S. Cox, of Philadelphia, for a research bureau to seek a cure for diabetes and to advance medical science.

Pyrmont.—The discovery of a new hot spring at Pyrmont, a health resort in Germany, is recently reported. An explosive outbreak caused heavy pieces of iron to be cast forth and huge amounts of boiling water shot up into the air.

Graduate Study in Pittsburgh.—The school of medicine of the University of Pittsburgh announces a two weeks' course for general practitioners, beginning June first, and a third week of laboratory instruction. Diseases of the cardiovascular system will receive special attention.

Harvey Society Lecture.—Dr. B. Brouwer, professor of neurology of the University of Amsterdam, will deliver the seventh Harvey Society lecture at the New York Academy of Medicine, Saturday evening, April 17th. His subject will be Comparative Anatomy and Nerve Pathology.

Medical Exhibit.—There will be a medical exhibit at the coming exposition in Philadelphia, covering all phases of treatment of the sick. A model sanitarium will be shown, and the medical specialties, recent scientific discoveries, pharmacy, dentistry, and the progress of medical education will be represented.

Gift to Northwestern University.—A gift of four million dollars has been received by Northwestern University, Evanston, Illinois, from Mrs. A. Montgomery Ward, for the purpose of providing the highest quality of personnel for instruction and research staff for the medical and dental schools. A gift of similar amount two years ago from Mrs. Ward is being used to build a fourteen story structure for the medical and dental schools. This is to be known as the Montgomery Ward Memorial Medical-Dental Centre.

Meharry Medical College.—This institution, at Nashville, Tennessee, is planning a campaign for an endowment fund, in connection with its fiftieth anniversary, soon to be celebrated. It is now a Class A medical school, and the only one in the south where negroes can obtain a medical education.

Montefiore Hospital Meeting.—The forty-first annual meeting of Montefiore Hospital was held March 28th, at the hospital. An informal reception was held and the buildings and work of the institution were inspected. Dr. David R. Lyman, medical superintendent of the Gaylord Farm Sanitarium gave an address on Sanitarium Ideals.

Gifts and Bequests.—Announcement is made of the following gifts to New York University and Bellevue Hospital Medical College: four thousand dollars from R. T. Crane, Jr., for the study of anaphylaxis; an anonymous gift of ten thousand dollars for expenses in the department of surgery; and an anonymous gift of five thousand dollars for experimental work in ophthalmology.

The sum of fifty thousand dollars has been received by Milwaukee University from Dr. and Mrs. Joseph Schneider, of Milwaukee.

The will of the late Mrs. Emma E. Hewlett of Cold Spring Harbor provides ten thousand dollars for the Huntington, Long Island, Hospital.

Personal.—Dr. Louis Nagorsky of New York has been appointed attending cystoscopist to the Bronx Hospital.

Dr. Everett Dudley Plass has received an appointment as head of the department of gynecology and obstetrics at the college of medicine of Iowa State University; he has been a member of the staff of the Henry Ford Hospital in Detroit.

Dr. George David Stewart of New York has been appointed one of the directors of the Broad Street Hospital.

Dr. Florence L. McKay has resigned as director of the New York State Department of Health's division of maternity and child hygiene, on account of ill health. She will be succeeded by Dr. Elizabeth M. Gardiner, who has been associate director.

Study of Effects of War Gases.—At the request of the American Legion and other agencies, General Frank T. Hines, director of the U. S. Veterans Bureau, upon the recommendation of Dr. Crossman, medical director, has appointed a board of medical officers to conduct an investigation and make an intensive study of the residual effects of warfare gases. The members of this board are: Dr. A. K. Krause, member of the group on investigation and research of the Medical Council of the U. S. Veterans Bureau and associate professor of medicine at Johns Hopkins University. Lt. Col. Harry L. Gilchrist, M.C., U. S. A., chief of research division, Chemical Warfare Service, United States Army; and Dr. Philip B. Matz, Chief, medical research subdivision, United States Veterans Bureau. This board held its first meeting March 9, 1926, at the U. S. Veterans Bureau and it was decided to begin the investigation at once. This will necessitate the study of the present status of some seventy thousand men who were gas casualties during the World War, and will extend over a period of twelve to eighteen months.

Society News and Notes.

At the last meeting of the section on Historical and Cultural Medicine of the New York Academy of Medicine, Dr. Charles L. Dana gave an illustrated talk on Temples of Æsculapius and Therapeutics of Ancient Greece, and Dr. Herman Goodman, an illustrated talk on the History of Phototherapy.

* * *

The Physicians' Wives' League of Greater New York will hold its first social event in the form of a luncheon at the Commodore Hotel, April 13th. The object of the newly formed society is spiritual and mental, aid to its members, and financial help to the widows and children of physicians. Mrs. Rose Climenko is president of the society.

* * *

At a recent meeting of the Society of Arts and Letters of Philadelphia Dr. Howard S. Anders spoke on music and health, taking as his thesis "Music is the great preserver of health, for it is one of the finest relaxations for both the audience and the musician, while at the same time it is stimulating and creates vitality in the body."

* * *

The Medical Society of the State of New York held its one hundred and twentieth meeting, at the Waldorf, New York, last week. Between twelve and fifteen hundred physicians attended. One of the subjects considered by the House of Delegates was the medical practice act providing for annual registration of physicians. The committees on public health and on postgraduate instructions made interesting reports.

* * *

The blizzard class, the graduates of the Bellevue Hospital Medical College, who received their diplomas March 12, 1888, the date of the memorable blizzard of that year, will celebrate their thirty-eighth anniversary by a reunion on April 10th. The class will be again the guests of their fellow alumnus, Dr. D. Hunter McAlpin. Dinner will be served at the McAlpin Hotel, April 10th, at seven o'clock. Invitations have been sent out to all the members of the class whose addresses could be procured. Since according to the American Medical Association directory seventy-five are still living of the one hundred and forty-four who graduated at the time, a large attendance is expected. Any one of that class who failed to receive an invitation and desires to attend, should communicate with the acting secretary, Dr. S. Adolphus Knopf, 16 West Ninety-fifth Street, New York City.

* * *

At the annual meeting of the New York Electrotherapeutic Society, just held in New York, the following officers were elected: president, Dr. Harry Eaton Stewart, of New Haven; vice-president, Dr. Richard Kovacs, of New York; secretary, Dr. Charles R. Brooke, of Newark; Dr. J. Willard Travell, of New York.

* * *

The Women's Medical Society of the State of New York held its twentieth annual meeting in connection with the meeting of the State Society. Among the speakers were Dr. Mary J. Kazmierczak of Buf-

falo and Dr. Agnes Brown of Rochester. The following officers were elected: president, Dr. Marion Craig Potter, of Rochester; first vice-president, Dr. M. Louise Hurrell of Rochester; second vice-president, Dr. Adelaide Dutcher of Syracuse; third vice-president, Dr. Edith R. Spaulding of New York; secretary, Dr. Anna Harvey Voorhis of Yonkers; treasurer, Dr. Harriet F. Coffin of New York.

* * *

The National Academy of Sciences has recently announced that it is sponsoring a plan to obtain immediate financial aid for pure science research, to be carried on in the United States, to offset the commercial trend which, they contend, most scientific investigation is taking. The announcement states that Secretary Hoover as chairman of the special board of trustees seeking to obtain this aid, has received expressions of endorsement from thirty university heads in this country.

* * *

Announcement has been made before the French Academy of Medicine of the discovery of an antitoxin against tetanus. The discoverers are Dr. Ramon and Dr. Zoeller who have been carrying on joint investigations for many years. Several hundred persons have been inoculated with small quantities of the virus, and the immunity appeared complete and lasting, and, it is hoped, may be permanent. The new antitoxin will be placed as soon as possible at the disposal of the medical profession.

* * *

A dinner was held on February 25th in the hall of the Royal College of Surgeons, Edinburgh, in celebration of the bicentennary of the Medical Faculty of the University of Edinburgh. The guests included a number of Great Britain's leading physicians and surgeons. There were toasts and responses from representatives of many Scottish and other British institutions and organizations.

* * *

The United Hebrew Charities and the Jewish Social Service Association have been merged, and the latter name retained for the new organization. This change of name reflects the drift from "charity" to social service which has marked the work of the United Hebrew Charities during the half century of its existence.

* * *

The Committee on Public Health Relations of the New York Academy of Medicine has recently issued a statement on the menace to health of the recent smoke nuisance in New York, which is well worth quoting. The committee "views with great concern the health hazard which has been created by the late continual, and to a large degree preventable, discharge of dense smoke into the air. On account of the smoke permeating the city atmosphere every one is forced to inhale soot and grit, and at certain levels sulphur compounds, carbon monoxide, and noxious vapors. The pall of smoke hanging over the city is materially reducing the amount of sunlight and is increasing humidity by interfering with evaporation. The interference with the beneficent action of the actinic rays of the sun by the all pervading smoke is detrimental to health, particularly to that of children. The smoke with its impurities greatly aggravates respiratory affections and causes inflammatory conditions of the eyes. It has encouraged and sometimes compelled the closing of windows, thereby interfering with proper ventilation. The Committee on Public Health Relations desires to record its whole hearted approval of the endeavors of the Department of Health to abate this nuisance, which is a discomfort as well as a source of danger to the health of the community, and urges the commissioner to continue his efforts in this direction.

* * *

The Visiting Nurse Association has recently issued its annual report for 1925. This report gives the total number of cases cared for during the year by the nurses of the association as 33,867, a total of 1600 more than in previous years. Of these cases 12,000 were children under six years of age.

* * *

Announcement has been made of a report made recently at a meeting of the Alumni Association of the Massachusetts Institute of Technology by Dr. Charles H. Herty of the finding of a perfect substitute for mercury. Dr. Herty declared that the discovery will stand out as one of the most important of the age. He did not reveal the name of the new substitute, but stated that it is an organic chemical which has been undergoing for several months a series of thorough tests.

* * *

Massachusetts General Hospital.—An appeal for funds is being made by the Massachusetts General Hospital, of Boston. The amount of $3,250,000 is desired, for the construction of additional hospital facilities and the endowment of research and education in medicine and surgery. Plans include additions to the Bulfinch Building, a three hundred bed hospital for patients of moderate means, a new ward building, and extension of the research laboratory, the outpatient and the röntgenology departments.

* * *

Meetings of the New York Academy of Sciences for April at the American Museum of Natural History are those of the section of biology on Monday, April 9th, and of the section of anthropology and psychology on Monday, April 26th.

* * *

At the recent Safety Congress in Albany, called by Motor Vehicle Commissioner Charles A. Harnett, the following motor code was drawn up: Courtesy keeps many a motorist out of a trip to a hospital, court or jail; if another motorist starts an argument, reply with a smile; make frequent inspection of automobile brakes, batteries, headlights, and other equipment; there are still some chauffeurs who have still to learn that gas and booze won't mix; never allow anyone who does not possess a driver's license to run your car; automobile models may come and go, but the back seat driver seems to continue riding; the expert driver is always a careful motorist; of course it is always the other motorist who is the fool—continue driving carefully.

* * *

The New York Microscopical Society will hold meetings at the American Museum of Natural History on Friday, April 9th, and Tuesday, April 20th.

Book Reviews

CHRONIC DISEASES

Chronic Disease. A Working Hypothesis. By E. Bach, M.B., B.S., D.P.H. and C. E. Wheeler, M.D., B.S., B.Sc. New York: Paul B. Hoeber, Inc., 1925. Pp. 142.

This is a book which must be either epochmaking, or of little value. It is a thesis of the authors that the ordinary diet of civilized life predisposes to chronic bacterial infections of the intestinal tract. The cumulative effect of the toxins of these bacteria absorbed daily, year after year, is a potent cause of many varieties of chronic disease. A gram negative bacillus that does not ferment lactose is held to be the chief offender. The patient is rid of his chronic intestinal infection by being placed on a vegetarian diet containing as much uncooked food as possible and is given autogenous vaccines prepared from the feces. By this means Dr. Bach and Dr. Wheeler have been able to cure or relieve patients suffering from eczema, psoriasis, rheumatoid arthritis, epilepsy, Graves's disease, asthma, cancer, as well as a variety of other conditions. The case reports are not always convincing and the reasoning underlying this method of therapy is not always sound. It would be astonishing, but fortunate, if the work of these authors were confirmed.

HYPERTENSION

Arteriosklerose und Hypertonie. Under Berüchsichtigung ihrer Beriehungen zur Gewerbehygiene und Ihrer Bekampfung auf Organotherapeutischem Wege. Von Dr. med. et phil. H. Griesbach. Giessen: Alfred Töpelmann, 1923.

In this pamphlet an attempt is made to demonstrate the value of animasa, a proprietary extract prepared from bloodvessels, in the treatment of hypertension. A brief discussion of the etiology of hypertension is followed by experiments showing the depressor action of animasa on normal animals and men. Then follow protocols of patients with hypertension treated with the drug. Although some falls in pressure are recorded, the results are not convincing, for no allowance is made for the spontaneous variation in blood pressure, and no diastolic pressures are recorded. Further evidence is needed to demonstrate the usefulness of this preparation in the treatment of hypertension.

PANCREAS

Pancréatites Chroniques avec Ictère. Causes, Diagnostic et Traitement. Valeur et Résultats E'loignés de la Cholécystogastrostomie. Par Dr. Pierre Mallet-Guy. Préface de M. le Prof. Berard. Paris: Masson et Cie, 1925. Pp. 265.

In the present monograph Dr. Mallet-Guy treats exhaustively all forms of chronic pancreatitis which are associated with jaundice. The diagnosis is usually made at the operation, when a hard tumor of the head of the pancreas (size of a walnut) compressing the choledochus is found. Whether this tumor is a neoplasm or a benign inflammation of the pancreas is at times very difficult to decide. Usually it is the result of the treatment which ultimately decides this question. Chronic cholecystitis and syphilis are the most frequent causes of this form of chronic pancreatitis. The treatment consists of biliary drainage either by cholecystostomy or cholecystgastrostomy. The examination of the duodenal contents before and after the operation is often of great assistance in arriving at a correct diagnosis. X rays help to decide whether in cholecystgastrostomy the functioning of the gallbladder takes place in a normal way or not. All the topics regarding diagnosis and treatment are described succintly and in a masterly way. The book deserves to find a prominent place in every practitioner's library.

PUERPERAL FEVER

Therapy of Puerperal Fever. By Privatdozent Dr. Robety Koehler. American Edition, Prepared by Hugo Ehrenfest, M.D., F.A.C.S. With Twenty-seven Illustrations. St. Louis: The C. V. Mosby Company, 1925. Pp. 276.

Here is a book that gives exactly what it purports to and does so in a most lucid and concise manner. The many and various types of therapy for puerperal fever, especially those most recently advocated, are carefully and critically considered. In each case the author, after giving the advantages and disadvantages of the method, states his personal opinion of the procedure. This opinion is always conservative and worthy of serious consideration. The author is not carried away by any passing fad in treatment, but views each procedure with broad and open mind. His conclusions are always valuable because of this attitude and also because of his very extensive experience. The style is engaging and makes most easy reading. The case reports are well chosen, always apt, and never excessive in number. The bibliography is most extensive and valuable.

This book presents a well digested and complete survey of the recognized types of therapy of puerperal fever by an experienced physician who is entirely familiar with medical literature and who is most rational and impartial in his judgment.

TROPICAL MEDICINE

Handbuch der Tropenkrankheiten. Herausgegeben von Prof. Dr. Carl Mense, Kassel. Dritte Auflage. Vierter Band, Mit 149 Abbildungen im Text, 18 Schwarzen und 11 Farbigen Tafeln. Leipzig: Verlag von Johann Ambrosius Barth, 1926. Pp. xii-762.

The fourth volume of this encyclopedic work includes the following diseases, discussed by the authors mentioned. P. Manteufel deals with the more important "cosmopolitan" diseases encountered in the tropics, such as typhoid fever and allied diseases, variola and varicella, etc. Dysenteric diseases and similar conditions caused by protozoa are discussed by R. Ruge. The occurrence of nervous and mental diseases is assigned to J. Moreira. Considerable space is devoted to verruga peruviana by H. da Rocha-Lima. The benign febrile diseases of short duration met in different tropical countries, dengue, pappatacci fever, and Weil's disease are taken up by G. Sticker. A large part of the volume is concerned with the amebic diseases of the liver and other viscera in dysentery and is discussed by K. Justi. Kala-azar (visceral Leishmaniasis) is the work of U. N. Brahmachari.

To those practising medicine in tropical regions

this work must undoubtedly prove of great value. To those who have studied tropical diseases in the temperate climates this book will be a revelation, as these diseases often assume different forms in their native habitats. The illustrations are numerous, well executed and many of them beautifully colored. The bibliography in most cases is very exhaustive and authors of all nationalities are given credit.

MEDICAL RESEARCH IN JAPAN

Transactions of the Japanese Pathological Society. Volume XIV. The Fourteenth Annual Scientific Session Held in Osaka, April 4th, 5th and 6th, 1924. Published by the Japanese Pathological Society. Editorial Office: The Pathological Institute of the Imperial University, Tokyo. Pp. xiii-293.

One hundred and seventy-six articles are included in this report, most of them of the nature of short protocols of experimental studies. The subjects discussed are too numerous even to mention and highly technical and the majority of them are of little practical value to the general practitioner. They certainly speak well for the high standards maintained in Japanese pathological laboratories and hospitals. A few of the reports are in the English language, but most of them are in German.

MASSAGE

Massage and Therapeutic Exercise. By Mary McMillan. Second Edition, Reset. With Seventeen Illustrations. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 331.

This book should be read by all surgeons who are interested in how massage and therapeutic exercise can be of distinct help to them in shortening the time of disability of their patients. If the author had not had such medical men as she did have to advise her regarding strictly medical and surgical subjects, one might object to the amount of surgery as such that is included. The reviewer had the greatest possible advantage to observe what rationally directed and applied massage and therapeutic exercise could do during and after the war, and he believes this book can be recommended for reading and study.

PHYSIOLOGY OF REPRODUCTION

Reproduction in the Rabbit. By John Hammond, M.A. (Cantab.) With foreword and chapter on the Formation of the Corpus Luteum by F. H. A. Marshall, F.R.S. (Biological Monographs and Manuals No. IV.) Edinburgh and London: Oliver & Boyd, 1925. 210 pages, illustrated.

In the majority of mammals probably ovulation takes place spontaneously, and whether copulation occurs or not; but in some species, such as the rabbit and the ferret, the Graafian follicles do not rupture and discharge their ova without the stimulus of sexual intercourse. In the rabbit, however, pseudo-pregnancy can be induced under experimental conditions, such as by allowing copulation with a male made sterile by vasectomy; and when this happens, ovulation occurs, succeeded by the formation of corpora lutea, and the consequent growth changes take place in the uterus and mammary glands. Also, in the domestic rabbit, there is no regular oestrous cycle, the animals generally continuing in the state of oestrum for prolonged periods, during which copulation can occur, succeeded by ovulation and pregnancy. It is supposed that, owing to there being no corpus luteum to regulate the time when the follicles ripen, this process can occur at any time under suitable conditions. In this respect the rabbit resembles the domestic fowl, and is quite different from the great majority of animals, so that this study is almost unique in that it is a contribution to an unusual field of animal biology.

The author's full and complete study of the physiology of reproduction in the rabbit is the result of a series of experimental observations covering many years; his work is supplemented by Marshall's valuable chapter on the formation of the corpus luteum. The plates illustrating the book are excellent and numerous.

ELECTRICITY

High Frequency Practice. By Burton Baker Grover, M.D. Fourth Edition. With seventy-three illustrations. Kansas City: The Electron Press, 1925. Pp. 555.

This book on high frequency is more than half composed of directions how to treat about all diseases known to medicine. These treatments are not confined to the use of high frequency alone, but cover the author's idea of how all these diseases can be rather successfully treated with all forms of electricity. The part of the book which deals with the different high frequency currents cannot be classed as authoritative except where direct quotations from known authorities are used. The author forgets frequently that electrical currents always take the shortest possible path (see Fig. 57) and some of his interpretations of the basic actions of high frequency currents cannot be recommended. The book is interesting for reading by those who do high frequency work but cannot be recommended throughout for beginners.

PHYSIOTHERAPY

Physiotherapy. By Harry Eaton Stewart, M.D. With Seventy-eight Illustrations. New York: Paul B. Hoeber, Inc. 1926. Pp. 368.

Dr. Stewart, being one of the younger, modernly trained physicians of vast experience in physiotherapy, has written a volume that particularly shows how useful physiotherapy is as an adjunct to modern medicine and surgery. The whole subject is completely covered in a comprehensive way which should well satisfy the inquiring mind of the physician of today, and it deserves a place with his books on therapeutics.

PHOTOTHERAPY

Ultraviolet Rays in the Treatment and Cure of Disease. By Percy Hall, M.R.C.S. (Eng.), L.R.C.P (Lond.) With Introductions by Sir Henry Gauvain and Leonard E. Hill. With Twenty Illustrations. St. Louis: C. V. Mosby Company, 1924. Pp. 110.

This book on ultraviolet rays is particularly worthy of note. Books have appeared in England for the practitioner and the physicist, but none seems to bridge these fields as well as this volume. The interest in the whole subject of phototherapy is increasing and though not ultraviolet therapy, the author includes some description of the applications of radiant light, making the book rather one on phototherapy with the most consideration given to the invisible rays. The book should prove worthy of reading by all modern physicians.

REMINISCENCES OF AN INVALID

The Idle Hours of a Victorious Invalid. By Lane Crauford. London: Chapman & Hall, Limited. Pp. 245.

This would be a charming book with a trifle less of the pollyanna attitude of sweetness and light. Even so, much of it is delightfully written, and we can forgive anything from a man who has been treated in the course of years of spinal invalidism by fifty-five different doctors! The author states in his preface that he calls himself a "victorious"" invalid because, although many of his doctors tell him he ought to be dead, he is not only alive, but kicking. As a sort of apology that a book of so personal a nature should be written by one not a celebrity, he says, "but everybody is writing reminiscences—stage doorkeepers, butlers and the like—so why shouldn't an invalid?"

The chapters are informal sketches on various phases of an invalid's life and experiences. One is a delightful description of Harley Street, London's "medical" thoroughfare. Another describes with a delicious sense of humor the interior decorations, literary fodder, and other attributes of the doctor's waiting room, in a way which makes the American reader feel that he would be very much at home in such places in London. A third gives us bits of travel and the experiences of a voyage by sea. There is an interesting chapter on Sir Victor Horsley—and so on indefinitely.

Upon finishing the book we feel that this invalid has really been "victorious," and that if he has put perhaps a little too much unctiousness into the telling of his story, it is more because he has assumed a slightly unfortunate literary manner, rather than that it is in the man himself. Doubtless his style arises from his desire to make his book proper reading for invalids or recuperating patients, which, he states, is the real purpose of his work. And in this he has surely succeeded.

PUBLIC HEALTH SERVICE

Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1925. Washington: Government Printing Office, 1925. Pp. 314.

This report shows that the birth rate in the United States for 1924 was slightly higher than that for 1923. In 1924 it was 22.5 births per 1,000 population; in 1923, it was 22.3. The rates varied from 31.6 in North Carolina to 16.1 in Montana. Preliminary figures indicate that the death rate was low. Twenty-nine states had an aggregate death rate of 11.9 per 1,000 in 1924 and 12.4 in 1923. In 1924 in these states the urban death rate was 12.4 per 1,000 and the rural death rate 11.4. An important item in the demographic record for 1924 is the reduction in the number of deaths of infants under one year of age, per 1,000 births, from 77.7 in 1923 to 71.9 in 1924. It will be of interest to quote from the report on two public menaces which have a most timely significance: "While perhaps not strictly within the purview of this bureau, I cannot refrain from inviting attention to the ever increasing number of deaths and injuries from the operation of automobiles. The death rate from this cause has risen from less than one per 100,000 in 1906 to nearly 15 per 100,000 in 1923, or more than 16,000 deaths per year. Incomplete reports for 1924 indicate a still higher rate for that year. For a number of years the physicians of the United States, through the American Medical Association, carried on a publicity campaign against the use of fireworks in celebrating the Fourth of July, with the result that these injuries were reduced to an almost negligible number. As it was thought that warnings would no longer be required, they were discontinued. Reports from thirty-six states of the casualties for the Fourth of July, 1925, show that 111 persons were killed and 1,030 were injured from fireworks as a result of the one day's celebration. Of the injured it is stated that 148 will probably lose the sight of one or both eyes. In many cases injury or death was due to explosives that were considered harmless, such as sparklers, blank cartridges, cap pistols, skyrockets, small firecrackers, and Roman candles. Comment seems unnecessary."

Death rates from diseases of the heart during the last ten years for which data are available show an almost steady increase and indicate that heart disease ranks first as a cause of death in the United States. Influenza and pneumonia combined give rates second to heart disease in magnitude. The death rate from tuberculosis (all forms) in the registration area dropped from 201.9 per 100,000 in 1900 to 93.6 in 1923. Reports from thirty-five states give a death rate of 88.6 for 1924. Deaths from cancer show a marked increase, and those from diabetes mellitus have almost doubled since 1900.

Of outstanding interest and importance were the conference of venereal disease control officers of various state health departments and the U. S. Public Health Service, and also the annual conference of the Public Health Service with state and territorial health officers held in Washington, which was attended by delegates from thirty states and two territories.

The report states that continued difficulty has been experienced in securing candidates who will take the necessary examinations for the regular corps of the Public Health Service. This is due to the shortage of recent medical graduates and to the greater financial returns to physicians in private practice as compared with those in governmental positions.

Medicoliterary Notes.

In Sweden the government controls all radio broadcasting in the country, and it has added to the regular radio programs a series of mental tests consisting of questions similar to the socalled Edison list. After each question is broadcasted, fifteen seconds is allowed for writing the answer. Then the correct answer is given. The audience will also be asked to identify familiar quotations and musical airs. The government radio service is also teaching foreign languages, English being the chosen tongue for this year.

* * *

The Department of Physical Education of the School of Education of New York University is giving courses on the special adaptation of physical education activities to subnormal and abnormal cases, according to the *Mental Hygiene Bulletin.* One course gives special attention to the atypical or problem child and to the adaptation of physical education to his developmental needs. This course is intended to fit students for service in an institution or for handling ungraded classes. The New York city school

for the feebleminded at Randall's Island is the laboratory for this course. Three other courses deal with mental patients. The Manhattan State Hospital and the Brooklyn State Hospital are laboratories for these courses.

* * *

The cross word craze received a new impetus in Budapest recently when a waiter in one of the biggest coffee houses committed suicide. In his pocket a cross word puzzle was found with the laconic note: "The solution will give you the exact reasons for my suicide and also the names of the persons interested." Police code experts are unable to solve the novel cipher and have called in local cross word puzzle champions.—*New York Times.*

* * *

Black Oxen, Gertrude Atherton's novel about a woman rejuvenated by the Steinach method, has been translated into German and is appearing in serial form in the *Deutsche Allgemeine Zeitung,* Berlin, preparatory to a dramatic presentation this spring.

* * *

At the recent convention of the New Jersey Mosquito Extermination Association at Atlantic City, it was announced that Dr. William Rudolph Williams of Rutgers University has discovered an effective mosquito repellent to be spread on the face and hands. This is made by mixing ordinary insect powder extract with vaseline, cold cream or face powder, using about fourteen units of the extract to ninety-six units of the cream or powder. This mixture is said to be effective for several hours.

* * *

Polygamy has almost entirely disappeared in Turkey, and it is reported that the "new woman" in that land is preparing to plead cases in court, practise medicine, nurse in hospitals, and enter other professions. Numerous organizations devoted to philanthropic, social, intellectual and political interests have been founded by women, and the ladies are even becoming associated, rumor has it, in business with their husbands.

* * *

Dr. R. Tait McKenzie, director of physical education at the University of Pennsylvania, is the sculptor of the new memorial that is to be erected in Edinburgh by Scotsmen living in the United States to the regiments of Highlanders who served in the World War, and won from the Germans the title of Ladies from Hell. The site, chosen by the Royal Academy and approved by the Town Council of Edinburgh, is singularly beautiful and appropriate. It is in West Princess Street Gardens, opposite the Castle, at which the central figure of the monument looks up. The memorial will consist of a seated youth in kilts, grasping his rifle which rests on his knees. Behind the figure will be a processional frieze. The lure of pipes and drums is symbolized by the first group of marching figures of a pipe band; next comes discipline in the representation of recruiting officers and files of regulars; determination and enthusiasms are exemplified by the untrained recruits who fall in behind. The central figure of the monument will be bronze mounted on a granite pedestal, and the frieze in white limestone. Dr. McKenzie, the sculptor, served throughout the war as a major in the Royal Army Medical Corps.

* * *

When the superintendent of schools of Grant County, Washington, makes his tours of inspection, he carries with him in his automobile a portable scales. On these he weighs twice a year every grade school child in the county. He has found that one fourth of the children are under weight. Each teacher is provided with a meal planning chart, and health meetings for parents are held in all the school centers.

* * *

The horns of Elfland have been heard blowing recently in Ireland, according to a dispatch to the *New York Times,* and hundreds of people have been traveling daily to a clump of bushes recently cut down, from which the unearthly music is said to proceed. Old folks say that Ireland has never seen good times since the fairies departed, and that now that they have returned, brighter days may be expected.

* * *

Newark's best dressed—or perhaps more truly most dressed man—was certainly discovered recently, when a workman fell twenty feet to the ground and was rushed to St. Michael's Hospital. Orderlies began to undress him, and succeeded in stripping him after twenty-five minutes' labor. He wore the following garments in the order mentioned: a jumper, two sweaters, a coat, another sweater, another coat, a sweater, a suit of heavy underwear, three pairs of trousers, two pairs of socks and a pair of shoes. The account states that he wore only one hat.

* * *

The University of Leningrad has recently announced the discovery by women scientists of short electromagnetic waves which it is said will revolutionize radio telephony, radio telegraphy and photography. Maria Levitskaya, a physicist, has discovered waves measuring less than fourtenths of a millimetre, while similar waves estimated to be only one hundredth part of a millimetre in length were discovered by Giagolieva Arcadieva.

* * *

Interesting features of the *Monthly Labor Review* for December, 1925, are a bibliography of children in street trades, compiled by Laura A. Thompson, Librarian of the U. S. Department of Labor; and a review of the analysis of industrial accidents to children in 1924 furnished by the Massachusetts Department of Labor and Industries.

* * *

Ibsen's *Master Builder,* with Egon Brecher in the title role and Eva Le Gallienne as Hilda, is well worth seeing, from a psychological as well as a dramatic viewpoint.

* * *

The New York State Department of Labor has just issued as Special Bulletin 139 an Analysis of 300 Accidents in Woodworking Factories, with Suggestions as to Safe Practice and Suitable Machine Guards.

* * *

Two recent documents of importance published by the Health Organization of the League of Nations are *Organization of the Public Health Service in Latvia,* by Dr. H. J. Cazeneuve; and *Etude Epidémiologique sur la Leishmaniose Viscérale in Espagne,* by Prof. G. Pittaluga.

* * *

Leon Trotsky, in a recent Russian newspaper, is said to have uttered a warning against naming babies for Ford. The Russian farmers, it seems, admire so greatly Ford's agricultural tractors, of which a great many have been exported to that country, that all the little Russian boy babies are being named Fordson. Trotsky, in his article, praises our great business man, but declares that there is no need to "saddle the sons of the Revolution with his name."

* * *

A group of Chicago experimenters, Dr. Elizabeth Miller Koch, Dr. R. G. Gustavson, and H. Casan, who represent the cooperative activities of the Department of Pharmacology of the University of Illinois and of the Department of Physiological Chemistry of the University of Chicago, have been able to show probable close relationship between the antirachitic vitamine in cod liver oil and the active constituent in irradiated cholesterol. Cholesterol is a beautifully white crystalline substance of a very complex chemical nature, which, when it is exposed to ultra-violet light or sunlight, is so altered that it may be substituted for the antirachitic vitamine in cod liver oil. The curative properties produced in irradiated foods are supposed to be due to the presence of cholesterol.

* * *

Popular articles on medical subjects that have appeared in recent periodicals are: You Should Live Eighteen Years Longer Than Your Grandfather, by Louis I. Dublin and Brenda Ueland in *Liberty* for December, 1925; On Being the Right Size, by J. B. S. Haldane in *Harper's Magazine* for March; Folks Don't Change Much When They Are Laid Up, by H. C. Bennett in the *American Magazine* for January; We Can Buy Health, by John A. Kingsbury in *Collier's Weekly* for January 2nd.

* * *

A Danish physiologist has recently proved that crying is hard work. His experiments have shown that the tissue changes that take place in a crying baby are double those in a baby asleep.

* * *

Congress has at present six physicians—one in the Senate and five in the House. Royal S. Copeland is the only Senator with an M.D.; the five Representatives are Dr. E. M. Irwin, of Illinois; Dr. Ladislas Lazaro, of Louisiana; Dr. J. J. Kindred, of New York; Dr. W. T. Fitzgerald, of Ohio, and Dr. J. W. Summers, of Washington.

Abstracts from Current Literature

GASTROENTEROLOGY

Endoscopy of the Abdomen.—O. E. Nadeau and O. F. Kampmeier (*Surgery, Gynecology and Obstetrics,* September, 1925) recommend the wider use of abdominoscopy in clinical and experimental work on account of its great practical possibilities. It represents the endoscopic method of examining the abdominal cavity and if carefully executed is a relatively simple and safe procedure.

The technic as described consists in producing a preliminary pneumoperitoneum, passing a trocar through the locally anesthetized abdominal wall, and on its withdrawal leaving in place a flexible and airtight sheath. This cannula then permits the introduction of any type of cystoscope preferred by the observer—an instrument either straight or curved, and adapted for either direct or indirect vision. With the cystoscope, an excellent view may be obtained of the interior of the abdomen, particularly in the region of the stomach, liver and bile tracts, and in the pelvic region. The kinds of operative or therapeutic measures performed with the guidance of the cystoscope in the urinary bladder may also be carried out in the abdomen.

In some cases peritoneal adhesions form the chief drawback to the employment of abdominoscopy. The diagnostician using the method must be familiar with cystoscopy, and with the normal and pathological topography of the abdomen.

The Significance of Acute Abdominal Pain.—Richard H. Miller (*Boston Medical and Surgical Journal,* December 24, 1923) says that in any case of acute abdominal pain, a careful history should be taken, and a careful examination must be done. While waiting to arrive at a diagnosis, no cathartic should be given, though enemas are permissible. Morphine must be used with the greatest care because it tends to mask the symptoms and not only render the diagnosis more difficult, but by decreasing the symptoms lull both the doctor and the patient into a false sense of security. Little or nothing should be given by mouth. The physician, if in doubt, should have a surgical consultation early. After all, of more importance than an accurate diagnosis is the decision as to whether or not the condition is surgical, and an occasional operation which turns out not to have been so urgent is of less damage than a life lost because operation has been too long postponed.

Radiology of the Gallbladder by Graham's Method.—Henry Cohen and R. E. Roberts (*British Medical Journal,* July 11, 1925) used the sodium salt of tetrabromphenolphthalein in their studies of ten pathological gallbladders. Their technic is the following:

All cases are first examined radiologically by the ordinary direct method for gallstones. No special preliminary preparation is made except that during the four hours preceding the injection no food or fluid is allowed. Five grams of the salt are dissolved in forty c. c. of distilled water and sterilized by boiling for thirty minutes. This solution is slowly injected intravenously in two doses, half an hour apart. To prevent extravasation of the dye into the surrounding tissues, the needle is inserted separately and blood is allowed to flow before attaching the syringe. The rate of injection should be slow to avoid untoward symptoms. The dye is followed by a few cubic centimetres of sterile normal saline solution to avoid leakage of the salt when withdrawing the needle. During the first day only a glass of milk is allowed for lunch and in the evening. During the second day ordinary fish diet is given. For the forty-eight hours following the injection forty grains of sodium bicarbonate is given every three hours during the day. Two and a half hours after the injection, 0.5 c. c. of pituitrin is given hypodermically, followed threequarters of an hour later by a simple enema. Radiographs of the gallbladder are taken four, eight, twenty-four, and thirty-six hours after the injection. Occasionally unpleasant symptoms of vasomotor shock and a lowering of the blood pressure are observed. Adrenalin may be given to prevent this occurrence. Three physiological requirements must be fulfilled for the gallbladder to produce a shadow: 1, the dye must be excreted by the liver; 2, the dye must be able to pass into the gallbladder; 3, the dye must become concentrated in the gallbladder.

In estimating the value of this method of radiologically examining the gallbladder, three facts must be borne in mind: 1. That only a maximum of thirty-five to forty per cent. of gallstones show evidence of their presence by the ordinary method of direct radiography. 2. That a negative finding by the ordinary method does not exclude the presence of gallstones. 3. That "gallstones are incidental and not essential to a cholecystitis which may necessitate surgery." It is therefore in those cases which by the ordinary method fail to show the presence of gallstones that this method is of particular value. By no other means short of operation can we ascertain whether this negative finding signifies a normal condition of the gallbladder or not. In other words, it should be used as an adjunct rather than as an alternative to the ordinary method of examination.

Acute Pancreatitis.—Andreas Christ (*Schweizerische medizinische Wochenschrift,* June 11, 1925) draws the following conclusions regarding the treatment of acute pancreatitis from his observations on twenty-four cases:

1. In fulminating pancreatitis severe prostration occurs within a few hours. Some of these patients die, whether operated upon sooner or later, regardless of the method used This cannot be determined beforehand, but some patients are saved by an early interference. Therefore, an operation should be done as soon as possible in all severe cases and those showing a stormy course. Drainage of the free exudate, splitting of the serosa of the pancreas, and thorough drainage are indicated.

2. An associated pancreatitis and fatty necrosis occur not rarely in acute inflammation of the calculous gallbladder. In the presence of free exudate the lesser omentum should be incised and the pancreas examined, and after elevating the transverse colon the duodenojejunal fold should be examined for evidence of inflammation. The radical operation (cholecystectomy and possibly choledochotomy) also definitely eliminates the involvement of the pancreas and should be tried under otherwise favorable conditions.

3. Recurrent acute pancreatitis may also occur without cholecystitis and lithiasis and is produced by fermentative process as a result of unsuitable food containing much fat. The repeated attacks eventually require operation, but the autopsy findings may be deceiving, inasmuch as during the attack there is an acute edema, but during the intervals no pathologic changes are found aside from the adhesive pericholecystitis. The specific intolerance toward fat rich food, however, persists and later leads to recurrences. The recurrent acute pancreatitis may precede the severe necrosis, or may recur repeatedly to a lesser or greater extent without danger to life. These attacks were relieved best by absolute fasting and extrastomachic administration of fluids.

Gallstones and Diseases of the Gallbladder.—Among other observations C. H. Mayo (*Annals of Surgery,* May, 1925) calls attention to the following facts: With cholecystitis there are definite reflex symptoms referred to the stomach at fairly definite periods, usually within thirty minutes after eating, with marked qualitative food dyspepsia caused by retention of gas producing, and greasy foods in the stomach constituting so called indigestion with pylorospasm. Less severe pain and more prolonged soreness after spells aid the diagnostician since it is probable that stones are either not present or are too large to obstruct the duct. The tenderness is due to a local peritonitis on an inflamed gallbladder overstretched by spasm of the sphincter of Oddi. With single cholesterol stones, and sometimes with multiple stones, there are few or no symptoms of cholecystitis; those of acute obstruction of the duct by stone occur without reference to meal periods, often in the night, and no soreness or discomfort remains the day after the attack. By palpation at operation the sentinel glands which indicate infection are found to be enlarged in proportion to the nature and amount of infection present. Nature has placed one gland, or two at the most, on each of the ducts, draining a rich lymphatic area. In health they are of a definite size, and in disease they are enlarged.

Cholesterol is increased in blood temporarily by excess of fat in food. There is this excess in pregnancy. Nearly eighty per cent. of the gallbladder diseases now recognized occur in women. Approximately eighty per cent. of these

have borne children, and had the first attack at the period of pregnancy or soon after childbirth. The primary disease is undoubtedly metabolic and involves the liver as well, and may all be of a temporary nature. The secondary disease, formerly called gallstones, is in the gallbladder or is induced by some affection of it. The gallbladder should be removed to eradicate the disease, unless there are such complications as acuteness of attack, the seriousness of the illness, acute pancreatitis, and other organic disturbances. If the gallbladder looks normal and contains a single pure cholesterin stone, or if the patients are of advanced age, cholecystostomy with drainage may be substituted. It is not as effective as cholecystectomy, as it does not relax the sphincter of Oddi.

The conditions of the pancreas should always be recorded at the time of operation, as pancreatic inflammation is usually secondary to disease of the liver, gallbladder and bile ducts. It may recur months after operation, with pancreatic colic and pain in the back, not unlike the original attack.

Gallbladder Disease.—R. S. Fowler (*American Journal of Surgery,* July, 1925) advises cholecystostomy in severe, acute inflammation; cholecystectomy in mild acute and chronic inflammation. Particularly is the latter true when a cholecystectomy can be done in the early stages of the disease. In discussing the relative merits of cholecystostomy and cholecystectomy there are two main questions to be considered, the function of the gallbladder and the final condition of the patient. The first, that of function, can be practically disposed of by the observation that whatever the function the fact is that the body does very well without it. The second, that of end results, is not so easily answered. The final result is dependent on the pathological conditions present and the extent to which it has been removed or relieved by operation.

Statistical results obtained in answer to five hundred and forty-four questionnaires sent out by the author show by their end results that cholecystectomy should be the method of choice.

Gastric and Duodenal Ulcer.—F. B. Mowbray (*Canadian Medical Association Journal,* October, 1925) emphasizes the point that operation is not the conclusion of treatment and should be regarded as the first stage only. During the next six months the patient should be under observation and eat appropriate and easily digested food; lead a regular easy life and refrain from overwork. Medical treatment is of the greatest value as a supplement to surgery, but not as a substitute for it. The success or failure of operation depends very largely upon the way the patient is treated during this period following the operation. We must also remember that though we may cure a peptic ulcer by surgery; when cured that patient may still be liable to attacks of indigestion, as would any normal individual. If as a result of indiscretions of diet, overwork, or for any other cause, he occasionally has attacks of indigestion, let us not assume that the ulcer has returned or that operation has been a failure.

Surgical Treatment of Gastric and Duodenal Ulcers with Special Consideration of Permanent Results.—Hans Finsterer (*Klinische Wochenshrift,* October 15, 1925) states that it has not yet been proved that the term "surgically incurable" ulcer has any justification at all; at any rate it has up to the present time caused much harm, inasmuch as patients, who have undergone several operations, are warned against a truly radical operation on the ground that nothing would be of any help and that the patient is incurable. It is the very cases, in which after three to five operations a really radical operation could eventually secure permanent cures, that show how careful one must be with the use of the term "surgically incurable" ulcer.

The indication for surgical treatment of a chronic ulcer will always remain a subjective one. An internist, who has observed not only good immediate results with surgical treatment, but has also seen good permanent results, will naturally advise a patient to be operated upon much sooner than one in whose experience there were only fatalities and failures. Even in the operation of choice there will be no uniformity for a long time, as even in this respect personal experiences play the most important part.

The author's point of view as regards the treatment of ulcer may be summarized as follows:

In gastric ulcer, a resection is absolutely necessary, not only because of better permanent results, but also because of the relative frequency of malignant degeneration and the impossibility of recognizing this during the operation.

In duodenal ulcer, the resection of the ulcer together with the pylorus and two thirds of the stomach remains the operation of choice. In ulcer that cannot be resected because of anatomic dissemination, the resection is done for the purposes of exclusion, and at least two thirds of the stomach is also removed. Gastroenterostomy deserves consideration under such conditions at the most in old people.

The important question, whether the lesser resections with direct union of the stomach and duodenum give better permanent results than the more extensive resections with anastomosis according to the modified Billroth II method, can only be decided by long periods of observation.

Gastrojejunal Ulcer.—A. J. Walton (*Lancet,* October 17, 1925) arrives at the following conclusions regarding gastrojejunal ulcer:

1. Gastrojejunal ulcer is a relatively rare complication of gastric and duodenal ulcer occurring in a little over two per cent.
2. Its frequency does not warrant the introduction of extensive operations for the treatment of the primary condition.
3. It is almost entirely limited to pyloric and duodenal ulcers.
4. It occurs almost wholly in the male sex, and is found in those cases in which the gastric acidity is high.
5. As a general rule it is found when the acidity after the primary gastroenterostomy persists, this being possibly due to an anatomical variation in the distribution of the oxyntic cells in the stomach.
6. The symptoms of this complication, although slight at first, nearly always commence immediately after the primary operation.
7. The frequency of the condition will probably be diminished by performing the anastomosis rather higher up than usual.
8. The treatment of the established condition should be by partial gastrectomy, which will be aided by placing the stoma rather more remote from the flexure than is usual at the first operation.

Pyelitis Manifesting Acute Abdominal Symptoms.—W. A. Lincoln (*Canadian Medical Association Journal,* November, 1925) says that pyelitis must be suspected in any unexplainable, febrile condition in children, and must always be excluded in acute abdominal conditions, especially appendicitis. It must be kept in mind that appendicitis and pyelitis may occur simultaneously. The early diagnosis of pyelitis may be difficult, because at first there may be no urinary symptoms, or pus in the urine. A careful history, palpation of the kidney region, and even a cystoscopic examination may be necessary to establish the diagnosis.

Appendicitis and Transposition of Viscera.—B. C. Willis (*Annals of Surgery,* August, 1925) presents a case which leads him to conclude that patients with leftsided symptoms and clinical findings suggestive of appendicitis should be carefully examined for transposition of the viscera. In cases of appendicitis and transposition of the viscera the incision should be made to the left of the umbilicus.

The Uses of Celioscopy.—A. Rendle Short (*British Medical Journal,* August 8, 1925) believes that there are a number of cases, not many perhaps, in which celioscopy is a far less formidable alternative than laparotomy. The abdomen may be distended with air without serious discomfort under a local anesthetic through a tiny incision so as to make inspection of the viscera with a cystoscope possible. No harm has been seen to follow this procedure during a year. The advantages of celioscopy over exploratory laparotomy are: 1, absence of discomfort under novocain; 2, the incision is so small as to necessitate a stay in bed of only a day or two; 3, no special instruments are needed; 4, it can be done at the patient's own house; 5, it is available when it would be dangerous to perform laparotomy.

The following lesions have been observed in this way: small malignant nodules on the surface of the liver; the absence of tubercles in a case of suspected tuberculous peritonitis; the extent of a carcinoma on the surface of the stomach; swellings of uncertain origin in the abdomen; the appendix; pelvic tumors; the presence or absence of blood in cases of ruptured ectopic gestation or traumatic rupture of a viscus; "hobnail" liver. Celioscopy does not and cannot replace exploratory laparotomy, where the cause of the condition has to be sought for and does not lie on the surface

of the abdominal viscera; it is principally valuable for what is definitely seen, and not for what is apparently absent.

The technic is simple. Under novocaine anesthesia, or under ether, if preferred, an incision half an inch long is made in the skin and fascia, usually in the midline just below the umbilicus. The incision is made in layer after layer just large enough to admit the cystoscope. The abdomen is inflated with air through the cystoscope, the air being filtered through sterile wool. Observations are then made and when the examination is complete the air is let out as completely as possible and a stitch put in.

Serious Complications Five Months After an Abdominal Contusion.—Perrier (*Paris médical,* December 5, 1925) refers to the case of a man aged forty-one years in whom evidences of intestinal obstruction appeared five months after an automobile accident. Operation revealed a complex mass consisting of omentum and loops of small intestine. It was found that the bowel was being strangulated by a ring of omentum. The affected portion of intestine was resected and an end to end anastomosis carried out. The patient recovered in spite of lung complications. Histological examination of the mass showed that the tissue compressing the bowel consisted of fibrous tissue with disseminated areas of granulation tissue and minute abscesses. The abdominal contusion is believed to have brought about a crushing of the small bowel and tearing of its musculature, followed by retraction of the omentum, stenosis and later strangulation. Stress is laid on the considerable interval of time which elapsed between the accident and the clinical disturbance.

Closure of the Peritoneum Without Drainage in Suppurative Peritonitis.—Billet (*Paris médical,* December 5, 1925), having seen this method used by Ombrédanne in three children with peritonitis of appendiceal origin, of whom two recovered, tried it himself, after much hesitation, and found reason to continue the practice. Of thirty cases of peritonitis, almost all of appendiceal origin, in which he closed the peritoneum without drainage, not one died. The procedure is indicated only if the appendix has been removed. The author does not bury the stump of the appendix. Douglas' cul-de-sac is painstakingly dried and the peritoneum washed with ether. In gangrenous appendicitis the same procedure is followed; in addition, bouillon vaccine is applied to the area of suppuration and antigangrenous vaccine injected subcutaneously.

Rest and Breathing Exercises in the Treatment of Obesity.—G. Leven (*Presse médicale,* December 16, 1925) protests against the assumption that obesity is a mere matter of excess in calories. Obesity is a symptom, not a disease. All recently acquired data on toxic obesity, obesity of endocrine origin, infectious obesity and obesity with brain lesions point to the complexity of the problem. Attempts at simplifying the matter by stressing caloric intake and output lead us away from the truth. In some cases of obesity physical exercise completely fails to reduce weight, while rest in bed for a few days followed by less complete rest causes a rapid drop in weight. However, complete rest is no more the sole therapeutic measure in obesity than is excessive physical exercise. With it should be coupled diet and breathing exercises. While diet alone can reduce some cases, in a larger number the nervous system is the main factor in reduction. There appears to exist a nervous centre which regulates the destruction of fats and is concerned in the production of obesity. The author has reduced some cases by correcting dyspepsia, without changing the caloric intake. The cause of the dyspepsia was sometimes a remote one viz., sexual excesses, mental strain or worry, or physical overwork. Without the regulating centre it would be difficult to explain the cases of increased weight in spite of restriction to very low caloric values; the author has seen and reported such cases. It would also be difficult to account for the well known cases of partial obesity, symmetrical lipomatosis and traumatic obesity. The cases of pronounced obesity are those which benefit the most from rest treatment. In the breathing exercises, after a short preliminary inspiration through the nose, the patient executes a prolonged expiration, as if he were blowing at a candle to bend the flame over without putting it out. The arms are not used in the exercise, which may be carried out when the patient is either standing, seated, lying down or walking. A sufficient expiration is followed by an automatic, abrupt intake of air. Five expirations are carried out in succession, fifteen to twenty times a day, at half hourly intervals. Roger and Binet have shown the rôle of the lungs in fat destruction, but the breathing exercises probably react on all organs and functions of the body, directly or indirectly.

Cancer and Diet.—M. Hindhede (*Acta medica Scandinavica,* October 24, 1925), surveying the cancer situation and noting the increased frequency of cancer for the last fifty years, is confronted with the dismal fact that his own country, Denmark, takes the lead in this regard. Thus in 1900 the death rate from cancer in Danish towns was 120 per 100,000 inhabitants, while in 1915 and 1916 it was 151. About this time London chronicled 112, Paris 111, New York 77 and Calcutta 12 per 100,000 inhabitants. In Denmark seventeen per cent. of all persons that have completed their forty-fifth year have every prospect of dying from cancer. And these sinister findings the author associates with the fact that the Danes are the "best fed people in the world." The Japanese also have a high cancer incidence and their food is rich and highly spiced. In contrast to this is noted the comparative rarity of cancer among uncivilized people who live frugally. And in support of the theory that overfeeding and a diet rich in animal protein plays a rôle in the causation of cancer the author quotes facts and figures. He affirms—indeed demonstrates—that a change from a rich dietary to a more abstemious mode of living is directly reflected in the statistical curve of cancer morbidity. Thus as a result of wartime rationing and also a widespread movement in Denmark, during the last decade, to return to the simple life, there appears a recession or a down-turn in the cancer curve that had ascended steadily for forty years. In other words we have the picture of an unprecedented cancer death-rate among a people regarded as unusually well fed, and concomitant with the leaner years of the last decade, there is recorded a diminution in the cancer death rate, the first in four decades. From his observations the author draws the following conclusions as to the probability of the main causes of cancer:

1. Irritation of the digestive tube (by strongly spiced nutrients, alcoholic drinks, tobacco, etc.)
2. Overnourishment by too varied, too savoury food.
3. A food too rich in animal protein.

To escape cancer we must return to the more frugal habits of our ancestors.

THERAPY

Treatment of Congenital Syphilis.—Carl Stamm (*Monatsschrift für Kinderheilkunde,* October, 1925) treated thirty-nine cases of congenital syphilis with mercury alone and in combination with neosalvarsan, and with bismuth alone and in combination with neosalvarsan, and found that the results with bismuth were markedly better than with the other methods. The preparation used was spirobismol, which contains iodine and quinine in addition to bismuth. The mortality with spirobismol alone was half that when neosalvarsan was used in combination. These favorable results are explained as being due to the fact that bismuth produces a slower destruction of the spirochetes and therefore does not produce a sudden toxic effect through destruction of the spirochetes.

The treatment consists of intramuscular injections only, giving 0.2 to 0.5 c.c. (equivalent to 0.006 to 0.015 gm. of bismuth) twice a week in newborn children and infants. The course consists of ten injections. All the symptoms disappear. The Wassermann reaction may remain positive till after the completion of the first course, but becomes negative after three months. A repetition of the course of treatment is nevertheless necessary.

Therapeutic Properties of Stovarsol.—C. Levaditi (*Lancet,* September 19, 1925) states that stovarsol (acetylaminophenylarsinic acid, 190) has been found to give favorable results in syphilis, yaws, intestinal parasitoses, amebiasis, lambliasis, and in malaria.

Eighty syphilitic patients were treated by ingestion of stovarsol in the form of tablets containing 0.25 gm. Four tablets, representing a dose of one gm., were given every morning in a little water before breakfast in periods of from five to seven days, each period being followed by an interval of equal length. In this way a total dose of twelve to sixteen gm. of stovarsol was given the first month. This method of administration was decided upon with two main ideas in view: 1, better arsenical impregnation, and, 2, prevention of accumulation.

Stovarsol exerts, in a great number of cases, a remarkable action on the primary, secondary, and tertiary erosive

and ulcerous lesions, an action which is often as rapid as that of the arsenobenzenes given intravenously. The product induces a rapid healing of the superficial syphilitic lesions; it is capable of arresting the evolution of the disease and of exerting a favorable effect on the blood reaction. To this must be added the excellent tonic effect which the compound exerts on the general condition of the patients. To prevent the occurrence of arsenoresistance and relapses, bismuth may have to be used in addition. The indications are hypersensitiveness to salvarsan, difficulty of giving intravenous injections, impossibility of applications other than per os, replacing salvarsan in its association with mercury or bismuth.

The efficacy of the method, its exceeding simplicity, and the security which it gives in a multitude of circumstances render it worthy of further trial.

Clinical and Pharmacological Studies on Peristaltin "Ciba": Its Effects and Indications for Intravenous Use. R. Wolfer (*Schweizerische medizinische Wochenschrift,* August 13, 1925) found that the intravenous administration of peristaltin in therapeutic doses is harmless, especially in regard to the circulation and the kidneys. Its action is that of an active cathartic and regulator of the intestinal activity without colicky pains and vomiting. The peristaltin acts intravenously as a glucoside complex without the splitting off of free anthrachinones. It affects the entire gastrointestinal tract and probably is the result of stimulation of Auerbach's plexus without any action upon the nerve fibres going to the muscles. Special attention is called to the effect of the increased tonus and peristaltic activity upon the small intestine in the cat and the stomach in man.

The main indications for the intravenous use of peristaltin therapy are the following: peritonitis and postoperative paralysis of the intestine; spastic and paralytic ileus; chronic obstipation; atony of the stomach; and conditions that demand a rapid epthying of the intestine (poisonings, gastrointestinal intoxications, etc.). The dose can without harm be increased up to two ampules. Subsequent injections at short intervals are harmless and often necessary, giving an increased action. Peristaltin may also be used intravenously in infancy.

Treatment of Exophthalmic Goitre.—Felix Klewitz (*Klinische Wochenschrift,* September 3, 1925) discusses some of the therapeutic measures available in the treatment of exophthalmic goitre.

It has been shown that an increased metabolism from hyperthyroidism can be reduced to normal with arsenic. Small doses of Fowler's solution are given.

Iodine therapy is still under much dispute, but fairly good results have been observed with an initial dose of three drops of a five per cent. solution of sodium iodide given three times daily, which dose is gradually increased to twenty drops three times daily.

A purely symptomatic effect is obtained with the nervines, especially the bromides, giving one gm. of potassium bromide in the morning and at noon, and two gm. at night.

Good results are reported from sodium phosphate, possibly given in conjunction with arsenic.

In light cases fairly good results are obtained with antithyroidin therapy, but it fails in the more severe cases.

Of the physical methods, röntgenotherapy has undoubtedly given some good results. In status thymolymphaticus, a preliminary irradiation of the thymus has been recommended. Only the following types of cases are suitable for this form of treatment: 1, the formes fruste; 2, the acute cases with pronounced toxic symptoms, including also the cases with status thymicolymphaticus; 3, cases with cardiac insufficiency or with other complicating diseases, where operation is contraindicated; 4, cases in which operation has been performed with no result, or those in which operation has been refused. The last two groups of cases show less favorable results than the first two, but no other treatment is available. Galvanization does not deserve the neglect that is usually accorded to it.

Other measures that may be of use are hydrotherapy (carbonic acid baths or indifferent warm baths with extract of pine needles). More important is the institution of a suitable dietotherapy with sufficient calories and a proper restriction of animal proteins (especially the articles of food containing tryptophan). The caloric values are increased mainly by the use of fat. Sufficient rest in bed is absolutely necessary. Climatotherapy at moderate altitudes is also worth mentioning. Of drug therapy, digitalis, in combination with quinine, may be tried.

Conservative Treatment of Glaucoma.—The following line of treatment is recommended by J. Burdon-Cooper (*British Medical Journal,* September 19, 1925) in the cases of glaucoma seen in the early stage:

The patient is given a bath at a temperature five degrees above that of the body, so as to relieve the internal congestion by peripheral dilatation of the blood vessels; this is essential. After the bath, the patient is put to bed, given a hypodermic injection of 0.25 grain of morphine, and after this an alkaline mixture containing bicarbonate and citrate of potash and soda, with one minim of liquor trinitri for a dose every three hours. The skin should be encouraged to act either by an electric blanket or hot water bottles. The urine should be tested beforehand. The only contraindication to the continuance of the nitroglycerin is the heart's action. The pulse rate should not be allowed to exceed 90. The hypodermic of morphine should be repeated the last thing at night and kept up twice daily until the attack begins to decline. The continuous application of dry heat to the eye is essential until the eye shows manifest signs of improvement. The author always uses eserine for an acute attack, and preferably the salicylate in 0.5 per cent. solution, which is instilled into the eye every three hours. An aqueous solution is absorbed better than an oily one. As soon as the attack subsides the drops should be changed to pilocarpine, two grains to the ounce, which should be gradually reduced to one grain or even 0.5 grain. Miotics should be used infrequently and as weak as possible, compatible with securing the necessary miosis. Dionine or adrenalin should not be used.

Subconjunctival injections aggravate the pain and should not be used. Injections of the nasal duct with twenty-five per cent. antipyrine and swabbing the nasal mucosa with 50 per cent. cocain over the region of Meckel's ganglian has been advocated for the relief of pain. The pressure massage of Domec is very useful and should be done frequently. Venesection is very useful to combat an acute attack and to relieve ocular tension. In established glaucoma venesection should always be performed.

Perfect rest and quiet are essential and the room should be only partially lighted. The air of the room should be moist. Inhalation of oxygen has been recommended to relieve the heart and improve the deoxygenation of the local and blood supply consequent on the stasis. The diet should be restricted and nonstimulating, and during the height of the attack large quantities of fluid should be prohibited. After the tension has come down the kidneys may be stimulated. The bowels should be emptied. The most useful drugs are: alkalies, iodides, salicylates, sodium bromide, chloral hydrate, strophanthus, and gelsemium.

In avoiding subsequent attacks it is advisable for the patient to lead a quiet life; chills should be avoided and woolen clothing worn next to the skin. Special attention should be given to the kidneys, heart, intestines, nasal sinuses, and the teeth. The climatic treatment is important. High altitude and too bracing and dry a climate is bad.

Treatment in High Altitudes.—J. H. Hirschfeld (*Schweizerische medizinische Wochenschrift,* June 4, 1925) draws the following conclusions:

1. The climate of high altitudes is a curative factor consisting of various distinct influences.

2. The favorable effect of such a climate upon many diseases is due to the diminished oxygen content of mountain air, which remains the same throughout the year at a certain level, and within the same barometric variations. Consequently the results achieved in these diseases at high altitudes are independent of weather, whereas in tuberculosis and similar diseases the sunshine is significant.

3. Gymnastic exercises can be adjusted to the abilities of the individual and thus fatigue may be avoided more easily than with other forms of exercises.

4. Both the gymnastics and the mountain climate have the effect of physical therapy.

5. With the combination of mountain climate and methodically graduated gymnastics, the functional ability of both the entire body and of individual muscle groups and organs can be improved more easily than with either factor alone.

6. The mountain climate alone, and especially with the addition of gymnastics, is the most effective remedy to relieve the patient of the functional disturbances of health. In all bodily ailments of a psychoneurotic nature, more rapid and better results are achieved with this treatment in high altitudes than in the lowlands.

GENITOURINARY DISORDERS

Tumors of the Testicle.—F. G. Bell (*British Journal of Surgery,* July, 1925) avers that:

1. The majority of testicular tumors belong to the teratoid category.
2. The relative representation of the various blastodermic derivatives varies greatly in different specimens.
3. Overgrowth of one blastodermic element with partial or total suppression of the others occurs frequently. Hypoblastic overgrowth is most common, mesoblastic next in frequency, and epiblastic least common.
4. Such overgrowth may be simple or malignant, and produces many variations from the typical three layered teratoma.
5. Teratoma testis is potentially malignant to a high degree.
6. Many carcinomata of the testis can be directly related to the malignant conversion and overgrowth of the epithelial, more especially the hypoblastic, elements of teratomata.
7. The malignant change may be selective, but may affect both epithelial and connective tissue elements in the same tumor.
8. The more adult the structure of the teratoma, the less liable is it to malignant change and conversely.

The fact that the bulk of the testis proper is usually situated towards the upper pole in teratoid tumors suggests that, in early cases at any rate, some diagnostic use might be made of it. Testicular sensation limited to the upper pole might occasionally give a clue to the nature of a particular tumor.

In cases coming under observation early, it would appear possible, from a study of the cut surface of the smaller tumors, to enucleate the teratoma from its capsule, leaving the testis and epididymis intact. However, in a paired organ like the testis such conservatism would rarely be indicated.

The use of the x rays may occasionally give additional information in a dubious scrotal tumor if the cartilaginous elements are well developed, and especially if bone is a prominent feature, as in the teratomatous (dermoid) cyst.

Ureteral Repair and Transplantation.—C. H. Mayo (*Annals of Surgery,* September, 1925) declares himself opposed to any method of developing a new bladder sac by using the mucous membrane, skin flaps, or skin grafting. Nor does he recommend any form of closed intestinal pouch as an artificial bladder, but offers the Coffey technic with slight modifications, as follows:

The intraperitoneal operation should be performed on the right ureter first, as the sigmoid is more difficult to handle on the right side after being fixed by an anastomosis on the left side. The incisions are oblique abdominal. The ureter can be seen attached to the back wall of the pelvic peritoneum. Its situation can be determined by the wave of peristalsis in it when the point of a forceps is drawn across its covering layer of peritoneum. The peritoneum is opened and the ureter separated down to a point from 2.5 to 4 cm. above the bladder. The ureter is divided and held in forceps and the lower end ligated. The peritoneum is then closed by suture, just leaving the ureter loose as it passes through the opening in it. A needle with No. 2 chromic catgut is now passed 0.6 cm. up the lumen of the obliquely cut end of the ureter, out through its wall, and then passed in again 0.3 cm. further on. It is then carried down the lumen of the ureter again and out at the open end. Two knots are tied and the short end of catgut 6.25 cm. long, is not cut but is passed into the lumen upwards its full length. This is a most important recent development in technic. The long end is left hanging for future use. The bowel is now cut longitudinally, in line with, or down, the centre of a longitudinal muscle band 3.75 cm. long. This cut does not open the mucous membrane. The sharp edge of the knife is pushed against each side of the cut muscle and peritoneum, separating the cut edges 0.90 cm. With a sharp small pointed knife a puncture of the same size as the ureter is made in the mucous membrane at the lower end of the incision in the bowel. The outer flap of the incised bowel is trimmed at the upper end to just the depth of its dissection in order to make room for the ureter to lie in the trough against the mucous membrane without being pinched at this point. The ureter is stripped and loosened for 6.25 cm. It may become kinked and fail to deliver urine for two or three days through a half paralyzed lower end of ureter. The curved needle with the thread of chromic gut that was left hanging from the lumen of the ureter is now passed into the lumen of bowel by way of the puncture described and out through the bowel wall 1.5 cm. below the opening; the thread drawn tight draws the ureter into the bowel.

A needle bite is now taken in the wall of the bowel and the thread tied to fix the end of ureter within the bowel at this point. In suturing the dissected flaps, every other stitch catches the outer tissue of the ureter to fix it. The peritoneum is now closed over the ureter by interrupted sutures. A running suture is employed to cover these sutures as well as the fixing suture which holds the end of the ureter in place.

The mortality is low for the apparent seriousness of the operative procedure, being by 13.33 per cent. in the sixty patients operated on. Operation is justified by the relief which follows it.

Movable Kidney.—C. P. Mathé (*Surgery, Gynecology and Obstetrics,* May, 1925) finds that the great majority of movable kidneys cause no symptoms and require no treatment. In a certain percentage of cases, however, renal mobility forms a definite clinical entity characterized by lumbar pain, urinary, gastrointestinal, and nervous disturbances, loss of weight, etc., and require fixation by abdominal support or surgical intervention.

The condition is more common in the female because the renal fossas are shallower, cylindrical or even funnel shaped, being wider below than above. This predisposition to displacement is increased at puberty because of the widening of the bony pelvis. In males the renal fossas are pear shaped, being narrowed below. Its greater frequency on the right side is due to the shape of the renal fossa, the presence of the liver on that side, and the weaker support afforded by the less well developed right perirenal fascia.

The majority of cases of renal ptosis can be relieved by the proper abdominal support, fattening, and strengthening exercises.

Nephropexy is a justifiable operation. It has been employed by numerous urologists of note who have found it satisfactory. It relieves symptoms and is indicated in the following cases of movable kidney: when the belt fails or is poorly tolerated; in those cases complicated by ureteral kink caused by fibrous bands; when the sag of the kidney has caused the ureter to kink over an aberrant vessel; in those cases in which adhesions have developed around a prolapsed kidney holding it in place; chronic colon pyelitis when faulty drainage due to increased mobility is not corrected by the belt.

Renal Papillomata and Ureteral Implants.—D. Bissell (*Surgery, Gynecology and Obstetrics,* March, 1925) concludes that implants occur from above downward or in the direction of the urine stream and never from below upward unless by continuity; therefore the urinary tract below the primary growth is peculiarly subject to this form of metastasis.

That when renal papillomata occur, the ureter of the affected side seems more susceptible to secondary involvement than does the bladder, and is usually affected prior to it.

That implants may occur anywhere along the ureter but are more liable to occur when there is a retarded flow as at the vesical orifice, or at points of injury, as when the ureter is severed and tied on partial removal.

That we are not justified in concluding, when nephrectomy is contemplated for renal papillomata, that the ureter is in its entirety normal because its vesical orifice seems not involved.

That as the ureter is susceptible to implants from the moment the primary growth above begins to throw off particles of itself, it should be considered a harbinger of danger, and as the ureter, under these circumstances, is a probable pathological entity, it is advisable to remove it *in toto.*

That if the ureter is not completely removed at the time of nephrectomy, its remaining portion should be removed as soon after as the patient's condition permits.

That the best method of removing completely the remaining portion of the ureter is by the combined transperitoneal and transvesical route.

Torsion of the Spermatic Cord.—M. Thorek (*Annals of Surgery,* June, 1925) declares that where the testis is fully descended and the torsion is very recent detorsion should be attempted, and may prove efficacious if it can be executed by external manipulation. The torsion is, however, likely to recur, and operation will ultimately have to be done to obtain permanent relief. Meantime partial or complete atrophy of the testicle may occur. After operative detorsion, if the testicle can be saved, an orchidopexy should be done to prevent recurrence. Orchidectomy and epididymectomy is indicated in every case in which necrosis, gangrene, atrophy, or persistent circulatory disturbance is present. Even though atrophy might reasonably be expected, where it has not already occurred, yet the dangers which may arise from possible infection suggest removal of the testicle and tunica vaginalis with shutting off of the peritoneal cavity. When the testis is undescended, if transposition into the scrotum cannot be properly directed, the same rule should apply.

The Mechanism of Epididymitis.—H. C. Rolnick (*Surgery, Gynecology and Obstetrics,* July, 1925) finds that epididymitis secondary to a posterior urethritis or vesiculitis results from extension of the infection along the lumen of the vas deferens, the mechanism here being the regression of the bacteria toward the epididymis following each peristaltic wave toward the posterior urethra.

Although no definite proof has been brought forth, it is most probable that bacteria are blocked in their passage up the epididymis beyond the tail, just as fluids are blocked experimentally, so that the bacteria involve the rest of the epididymis by peritubular extension and not intratubular extension, producing a periepididymitis rather than epididymitis of the body and head.

This may explain in part why it is that a gonorrhœal epididymitis is practically never an epididymoorchitis but a pure epididymitis, the organisms not having traveled up the tubule of the epididymis beyond the tail.

This epididymitis rather than epididymoorchitis may also be accounted for by the resistance of the testicle to the gonococcus. It may also be explained by the fact that the tunica albuginea being of a different structure than the tunica vaginalis arrests the extension of the infection to the testicle.

If our deductions are correct then epididymotomy is an operation that should be limited to the tail of the epididymis, for it is here that the process is intratubular. As performed at present it is more or less of a blind operation, the whole epididymis being slashed in many directions. Incision of the epididymis tubule does not increase the danger of occlusion as has been shown clinically and also experimentally with the vas deferens because the epididymis undoubtedly has an equal regenerative capacity.

Undescended Testicle.—S. G. Sonneland (*Surgery, Gynecology and Obstetrics,* April, 1925) offers a new theory for the explanation of ectopic testis based upon 1, the presence of a chorda gubernaculi which is functionless following the escape of the testis from the subcutaneous inguinal ring; 2, a sufficient length of the spermatic cord to permit the excursion of the testis upon certain well defined fascial planes outside the subcutaneous inguinal ring; 3, the peculiarity and constancy of the distribution of fascial planes over the lower part of the ventral abdominal wall and in the perineum, and 4, the operation of physical laws which govern a moving body. The migration of the testis divides itself naturally into three stages, 1, intraabdominal, 2, intracanalicular, 3, extracanalicular. While other forces aid the normally moving testis in the first two stages, in the extracanalicular area the chorda functions quite alone and is of necessity solely responsible for the movements of the testis through this zone and onward into the testis sac. The essential factor of ectopic testis is thus in all probability a fracture or transverse separation of the chorda gubernaculi in consequence of the excessive stress upon it.

The subsequent fate of the testis as far as its position is concerned depends upon certain further factors, some of which are variable, such as the degree of tautness or laxity of the spermatic cord, the degree of development of the superposed cremasteric muscular loops, and peculiarities of insertion, relationship and continuity of certain fascias (Scarpa's, Colles', Buck's), which are fixed and invariable over the lower part of the ventral abdominal wall and in the perineum.

Thus if the spermatic funiculus is extended and taut at the time the chorda breaks, and more particularly if in addition it is equipped with a well developed cremaster muscle, then the probability that the testis will be retracted into the inguinal canal is great.

In further support of this new accident-gravity interpretation for the occurrence of ectopic testis, the author desires finally to emphasize that there is a physical law to the effect that under gravity a moving body tends always to establish an equilibrium for itself and to come to rest. That there exist several normal fascial recesses or pockets the interiors of which are continuous with the only fascial plane upon which a testis with an inclination to become luxated may move, these pockets thus becoming available to such testes under the influence of gravity, is recognized as is the fact that these fascial recesses are the familiar habitats of the ectopic testis.

It would seem reasonable to conclude therefore that the presence of a testis within the confines of such a fascial pocket is evidence of the successful operation of a law of physics in a definite and favorable environment, and not at all due to the activities of a chorda gubernaculi with multiple distal insertions which cannot be proven to exist.

Malignant Tumors of the Testicle.—F. Hinman, T. E. Gibson and A. A. Kutzman (*Annals of Surgery,* October, 1925) state that a final analysis of their cases show that we have to consider but two types of testicular tumor, both of which are malignant, the teratoma or mixed tumor and the seminoma or unicellular type of tumor. The pathology of testicular tumors would be further simplified if we could accept Ewing's dictum that the seminome is also of teratomatous origin, and represents merely a one sided (monodermal) development of a tumor primarily tridermal in constitution. Although we have not subjected our own specimens to serial section, we have been impressed with the uniformity of seminomata as distinguished from mixed tumors and were likewise skeptical of Ewing's beliefs until studying specimen No. 2356 in our series. We have always subjected our seminomata to careful histologic study in an effort to corroborate Ewing's theory, and were finally able to do so with this single specimen in which mixed tissues of various types were found abundantly associated with typical seminomatous tissue. The term "seminome or "spermatocytoma" must therefore be regarded as a misnomer, and the contention of Chevassu is disproved in favor of Ewing's theory.

Spastic Obstruction to the Ureters.—T. N. Hepburn (*Annals of Surgery,* June, 1925) finds that spasm of the ring muscle bundles described by Brödel is a frequent cause of ureteral obstruction.

The trigone controls both inlets of the bladder by action of the interureteric muscle—each end of which encircles the ureteral openings. Spasm of this muscle can be definitely diagnosed as a cause of ureteral obstruction, and may be successfully treated surgically.

Cutting the interureteric muscle and closing the cut anteroposteriorly in conjunction with dilatation of the intramural portion of the ureters with bougies is the best treatment for those cases that will not yield to hygiene or dilatation with bougies.

Heat Treatment of Male Gonorrhea.—D. A. Brown (*American Journal of Surgery,* August, 1925) says: Because of the recognized value of heat in combating gonorrhea in the male, I have been making use of an irrigating medium of a basic normal saline solution heated to 120° F. In acute cases, I have found that the urethra will tolerate an irrigating solution gradually increased from 110° to 120° F. with no discomfort. The urethra is very gently filled with the irrigating solution after the anterior portion is first washed out; then, when the meatus is compressed the substance is retained for several minutes. At one irrigation 2,000 c.c. of solution are used; the treatment is time-consuming, but the results to date justify the time and care. During the first week the patient is instructed to inject from two to four c.c. of one per cent. mercurochrome four times a day after urinating. The rapid disappearance of gonococci from the discharge leads me to believe that this simple method of employing heat is as effective as any of the more complicated processes. The patient is instructed with regard to general hygiene, rest, diet, the drinking of large quantities of water, sexual and alcoholic abstinence, and alimentary elimination.

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Medicolegal Notes.

SOUND HEALTH WITHIN MEANING OF INSURANCE POLICY

The Georgia Court of Appeals holds, National Life and Acc. Ins. Co., 129 S. E. 113, that the term "sound health" as used in a life insurance policy which provides that there shall be no liability thereunder if the insured is not in sound health at the date of the issuance of the policy, is properly defined in a charge to the jury in an action on the policy as follows: "If the insured enjoyed such health and strength as to justify the reasonable belief that she is free from derangement of organic functions, or free from symptoms calculated to cause reasonable apprehension of such derangement, and to ordinary observation and to outward appearance her health is reasonably such that she may with ordinary safety be insured and upon ordinary terms, the requirement of good health is satisfied . . . The term 'sound health,' or 'good health,' used in a policy, means that the applicant has no grave impairment or serious disease, and is free from any ailment that seriously affects the general soundness and healthfulness of the system."

ACTS OF EXAMINING PHYSICIAN AS AGENT OF INSURANCE COMPANY

The Georgia Court of Appeals holds, Mutual Life Ins. Co. v. Brown, 129 S. E. 307, that where a physician has, in behalf of a life insurance company, examined an applicant for insurance whose application has been procured by a soliciting agent of the company, an acceptance of the physician's report with knowledge of this fact and the issuance to the applicant of a policy of insurance based upon the report amount to a ratification of the act of the physician in making the examination for the company, and it follows that the physician in making the examination acts to all intents and purposes as the company's duly authorized agent. It is held not necessary to such ratification that the insurer, through its officers who accepted the report of the physician and issued the policy, should have actual knowledge of all the information given by the applicant to the physician in the course of the examination. Any such information given to the physician is, although not reported to the company's officers whose duty it is to pass upon applications and issue insurance, nevertheless notice to the company.

When the answers made to the physician by the applicant, in response to questions by the physician, are not recorded by the physician, and are not reported by him to the company's officers whose duty it is to pass on applications and issue policies, and although the applicant may have signed the record of his answers made by the physician, and certified that "each and all of the foregoing statements and answers were read by me, and are fully and correctly recorded by the medical examiner," it is held that the company cannot, in an action on the policy, defend on the ground that the applicant withheld certain material information and thereby fraudulently induced the company to issue the policy, notwithstanding a provision in the policy that it and the application constituted an entire contract, and that all statements made by the insured should, in the absence of fraud, be deemed representations and not warranties.

CONSTRUCTION OF TOTAL DISABILITY PROVISION IN INSURANCE POLICY

In an action on a policy providing for full indemnity if the insured, from accidental injury, should be continuously and wholly disabled and prevented from the date of the accident from performing any and every kind of duty pertaining to his occupation, it appeared that the insured, a ship surveyor accidentally fell and was struck upon the head and chin, causing a lesion in the left internal capsule of the brain, resulting in hemiplegia, accompanied by aphasia. He attempted to continue at work and apparently did so until he became paralyzed and was unable to get about at all. The New Jersey Supreme Court held, Booth v. United States Fidelity & Guaranty Co., 130 Atl., 131, that the fact that the insured tried to work was not to be taken as conclusive evidence of his ability to do so, so as to deprive him of the right to full indemnity, and that he should not be penalized for honest efforts to keep going when nature demanded that he desist.

INSUFFICIENT EVIDENCE OF NEGLIGENT TREATMENT IN HOSPITAL

In an action against a physician who owned and managed a hospital for injuries alleged to have been sustained during plaintiff's period of child-birth by negligent bathing with an excessive amount of bichloride of mercury, the Maine Supreme Judicial Court, Mills v. Richardson, 130 Atl. 353, granted a new trial, being of opinion that the jury erred in their finding for plaintiff, because, "especially in the light of the testimony given by medical experts called by both sides, the conditions of which the plaintiff complains were more likely to have arizen from leucorrhea and other physical conditions than from the douche."

EXPERT TESTIMONY AS TO WHAT WAS SHOWN BY X RAY PICTURE

The Missouri Supreme Court holds, Bachman v. Quincy, O. & K. C. K. Co., 274 S. W. 764, that a doctor expert in taking x ray pictures, who took an x ray picture of the plaintiff in a personal injury action, and another doctor to whom he turned it over so that he could examine it and prescribe for the patient, were both competent to testify as to what the picture showed without having the picture before them at the time of giving their testimony, where the presence of the picture was disclosed, and the process of the court for its production was open to the other party if he desired it.

MEDICAL WITNESS ALLOWED TO LOOK AT UNIDENTIFIED X RAY PLATE

In a personal injury case reversal of judgment for plaintiff was sought on alleged error on the part of the trial court in permitting a medical witness, who was the plaintiff's physician and attended her at the hospital, to look at an x ray plate, which he was unable to say was a photograph of the plaintiff's leg after her injury, and to testify that an inspection of this plate refreshed his recollection as to the condition of the bones in plaintiff's foot.

The testimony was objected to on the ground that it was improper to permit the doctor to refresh his recollection by the use of a photograph that he could not swear was taken of the plaintiff's foot or leg. The New Jersey Supreme Court held, Hankelman v. Pasteelnick, 130 Atl., 441, that the objection was without merit, and that "anything which will refresh the recollection of a witness may be looked at by him for that purpose, although in itself it is not evidential."

AWARD BASED ON PHYSICIAN'S REPORT WITHOUT OPPORTUNITY FOR EXAMINATION HELD REVERSIBLE

The New York Appellate Division holds, Gannuzzi v. Foxwood Const. Co., 207 N. Y. Supp. 363, that it was error for the State Industrial Board to receive and act upon the report of a physician, received outside of any regular hearing, without the knowledge of the employer or insurance carrier, who were thus deprived of the right to examine the physician in respect thereto.

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The Problem Method of Medical Teaching

The Repercussion

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In the MEDICAL JOURNAL AND RECORD for June 17, 1925, I published the preliminary article entitled The Problem Method of Medical Teaching. It may be recalled that the opening sentence, and the keynote, was as follows: "At no time does one concentrate so thoroughly on the available data as when endeavoring to attain the solution of an absorbing problem, and at no time does one so take cognizance of pertinent facts as when equipping oneself to meet a definite situation." From this postulate I endeavored to outline the principles of a medical course consistent with such a postulate. Inasmuch as the medical course is essentially a vocational training, with such additional cultural values as may be incidental, it was suggested that the medical student would do best work if his studies all centred on or about actual clinical subjects. No attempt was made to suggest that the medical student should essay diagnosis until firmly grounded in the fundamentals, but it was contended that the teaching of these fundamentals might well be in relation to definite clinical problems.

The method as outlined in the preceding paper was that the student should be brought first into contact with patients carefully selected from the hospital wards and clinics so as to furnish a carefully graded series. The manifesting illness would be briefly discussed by the attending clinician, and the students then told to seek in their laboratories of anatomy, histology, pathology, and physiology adequate fundamental reasons for these particular manifestations; and when these reasons were found to return to this clinic for further discussion. A similar graded course covering the work throughout the present four years would be required.

In the preceding preliminary discussion no attempt was made to outline such a course; the principles only of such a course were there offered. A sample of the nature of the work (an assumed heart case) was presented, but solely to make more clear the nature of the argument.

Realizing the many difficulties that stood in the way of adoption of such a plan, it seemed best to ascertain the opinions of those presumably most interested. So reprints of the article, together with a brief printed questionnaire, were sent (with an addressed stamped envelope enclosed) to college presidents, deans of medical schools, professors of medicine, surgery, and pathology, presidents of all state medical societies, secretaries of all state medical societies, some general practitioners, and a few selected miscellaneous public men. Each one was requested, after reading the article, to express briefly his opinion as to the principles involved; the expression of opinion could be made by placing a mark adjacent to any of the five questions, to wit: 1. Do you unqualifiedly approve of this method? 2. Do you qualifiedly approve? 3. Do you qualifiedly disapprove? 4. Do you unqualifiedly disapprove? 5. Do you think the method feasible (or not)? Finally, what are your criticisms?

Three hundred and sixty-eight reprints with accompanying cards were sent out; 116 were returned, a percentage of return of 31.8. This, I am told, is a high percentage for questionnaire returns; I am constrained to believe, however, that there can be but two reasons why I did not receive one hundred per cent. returns; either the men addressed who failed to reply did not feel competent to make reply (as some admitted), or else they were more interested in something else.

The relative interest may be somewhat indicated by the following table:

	Number Sent Out	*Number Returned*	*Percentage*
College presidents	44	3	7
Medical deans	52	26	50
Anatomy professors	33	11	33
Surgery professors	33	11	33
Pathology professors	33	14	42
Medicine professors	33	9	27
Pres. med. soc.	54	13	24
Sec. med soc.	54	16	30—
General practitioners	24	5	31—
Miscellaneous	8	8	100
Total	368	116	31.8

The various attitudes of those who replied are fairly clearly indicated in the following table:

	Unqualifiedly approve	*Qualifiedly approve*	*Qualifiedly disapprove*	*Unqualifiedly disapprove*	*In doubt*
College presidents ...		2		1	
Medical deans	1	9	9	6	1
Anatomy professors..		5	2	4	
Surgery professors...	3	4	1	3	
Pathology professors	1	4	5	4	
Medicine professors.		6	1	2	

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	Unqualifiedly approve	*Qualifiedly approve*	*Qualifiedly disapprove*	*Unqualifiedly disapprove*	*In doubt*
Pres. med. soc.	4	6	2	1	1
Sec. med. soc.	2	9		4	
General practitioners.		5			
Miscellaneous	2	3	1	1	1
Totals	13	53	21	26	3
Percentages	11.2	45.7—	18.1	22.3	2.5

From this table it will be seen that about fifty-seven per cent. of those answering favored the plan, more or less, eleven per cent. unreservedly; whereas about forty per cent. were opposed to the plan, twenty-two per cent. unreservedly. The major opposition was from the professors of pathology and from fifty-seven per cent. of the deans; the major support for the plan came from men more closely in touch with professional needs. The table will well repay study as showing relative attitudes.

Several of the writers contributed comments; when tabulated some of these comments appear as follows:

Too busy to answer	1
Such a plan would produce complete disorganization	2
This is the Toronto plan	3
It would require a tremendous supply of cadavers	5
It would be useful during the last two years	3
The fundamentals must be taught first	14
Too much taught now that is useless	6
It would require ideal faculty cooperation	9
Students of first two years unequal to such a plan	9
Would make technicians, not students	1
Good for later years	7
We need more homespun material	1
This is the best solution I have ever seen	3
It would take the best men from your faculty	1
The principle is good	11
All good teachers teach that way now	2
Well worth a trial	4
Too visionary	2
Chiefly a difficulty of administration	8
Not possible	2
Chaos would result	1
Correct idea but too much elaborated	1
Not feasible	67
Receipt of questionnaire acknowledged	12

Some of these comments deserve special reply at this time. The men who see in this plan a "chaos," "complete disorganization," a thing "not possible," or a thing "too visionary," are lacking in adequate imagination, or are superlatively conservative. The three who think this plan is like the Toronto plan are unfamiliar with the Toronto plan; the two are about as unlike as they could well be. Five anatomists are unduly perturbed about the cadaver supply, as this plan would demand no more cadavers than the present plan; it would require, however, close cooperation between anatomist and clinician, carefully graded work and dissection, and efficient embalming so that an assigned cadaver could be worked on for four years, and there would have to be adequate storage capacity.

If the plan would be useful during the last two years, why not during the first two? At least nine men think that the men of the first two years are mentally unequal to the task; this seems to me to be an utterly unwarranted aspersion. "But," say others, "the fundamentals must be taught first"; the plan anticipates the teaching of the fundamentals first. The problem method anticipates correlating fundamentals with clinical facts, teaching the fundamentals as they are concerned with the "case" observed. Under the present régime the student receives his anatomical fundamentals *en masse* with only such vague correlation as the teacher of anatomy may happen to know or choose to give; and the same remoteness of correlation between fundamental fact and clinical utilization is true in the courses of pathology, bacteriology, histology, physiology, and pharmacology—in fact, in all the fundamental branches as administered at present. But the problem method demands that there shall be a definite and tangible correlation in the teaching of each of the fundamentals and the clinical facts. The fundamentals must precede the clinical application; but let it be piecemeal and in reference to actual cases, and not *en masse* the way it is at present.

The difficulties of administration of the problem method are ponderous, it is true, but not insuperable. This difficulty of administration is recognized by many deans, by myself, and by many others who view the plan as not feasible. Cooperation by teachers of the socalled fundamental branches is difficult to secure; the requisite sacrifices by clinical teachers is not easily obtained. Yet tactful persuasion, coupled with appeals to relative values, will win over many. Of course there will be some teachers who place their own comfort, convenience or wishes above the needs of the students or the welfare of the people; there are some clinical teachers who primarily are profiteers. These must be slowly eliminated in favor of men who will place commonweal ahead of personal gain and ambition.

One dean wishes that I might experience the tribulations of deanship; I do not underrate them, but I do not consider them unsurmountable obstacles to progress. Another dean is peeved because my preceding article fails to give the details of effective administration; this first article concerned itself with underlying principles, if these are acceptable the details can be worked out readily.

One president, frankly acknowledging his personal lack of information concerning the problem, submitted the matter to one of his faculty. The report, as frankly and promptly indorsed by the president, was to the effect that no need existed for any such article as mine. This president, and his cloistered adviser, need to consult available literature; for example, they are referred to an article by the celebrated Chicago surgeon, Dr. Edward H. Ochsner, which appeared in *Science* for December 25, 1925. This article is entitled The Need of More Well Trained Practitioners of Medicine. Some pertinent excerpts are as follows: "Are the medical schools of this country today preparing their students primarily and principally for the services which the citizens of this country need most? Personally, my answer is no." "My opinion is based on an extensive experience with a large number of recent graduates." "One of the reasons why the medical student of today is so poorly prepared for the general practice of medicine when he graduates is because most of the teaching in medical schools is being done by nonmedical teachers and specialists." "The number of nonmedical teachers has increased to a point where it actually seriously interferes with proper medical education." If teachers will but consult available literature, or will consult practitioners, they will quickly find that present day methods of medical teaching do

not adequately prepare the students for the practice of medicine. Nor may the fifth year internship be looked upon as a satisfactory substitute for earlier deficiencies, valuable though this internship undoubtedly is.

Two or three correspondents think that "unless we continue to ground our students thoroughly in the fundamentals" the students will be unscientific, and cults and isms will increase apace. This line of argument presents many fallacies. In the first place, the present method does not ground the students thoroughly in the fundamentals; how much "Gray" does the senior student recall other than that portion pertinent to fourth year work? How much better it would be if the student's anatomy had been correlated with his surgery or medicine. In the second place the present method is less advantageous than the problem method in the matter of "grounding," unless we deny the truth of our postulate—that interest augments concentration. Third, there is no adequate evidence that the present method turns out scientific physicians, or that the present method is scientifically superior to the problem method; either point is widely debatable. The upholders of the present system are inclined to be ultraconservative, and ignore the fallacies so patent to others.

Closely related to the pedagogical standpatters are those who fail to recognize the fact that a medical school is primarily a place and opportunity for training men for the efficient practice of medicine. Say these: "The first two years are largely cultural." Any culture obtained during the first two years in the medical school is purely incidental; isolation of these years will not increase obtainable culture. Close our eyes to evident fact as we may, the truth remains that the medical school is, and ought to be, a technical school; a school where men are trained to be skilled members of society. The crowded curriculum has no place for purely cultural subjects, but those subjects only which aid the student to grasp applicable truth more strongly. Culture, as such, must be provided before the man enters medicine; medicine may be, and is cultural, but is not of itself culture; that is, it is not a general subject, one electable for its generalizing information, but a specializing subject that one pursues for particular purposeful training.

Some teachers of medicine (in the first two years, of course) are extremely jealous of their opportunity for developing embryo research workers; but as Ochsner caustically says: "Only an infinitesimal percentage of the general run of medical students will ever discover anything really worth while." Shall the balance of the medical student body, the medical profession, and that unknown but vast multitude that relies (more or less) on the medical science for its protection, become subservient to the speculative needs of these few? Only an individual pedagogically astigmatic can answer in the affirmative; yet I have heard the affirmative side upheld!

Concerning the relative merits of the thesis outlined in the article on The Problem Method the dean of one of the largest and most progressive state schools writes me as follows: "I am one of those who are gravely dissatisfied with the present arrangement and who feel strongly that the method of teaching the fundamental sciences is faulty. The amount of waste effort as compared with the very moderate result seems to me to be serious. I am quite clear that some method of bringing fact and application together is imperative. Your method seems to me a possible solution. I see as you do administrative difficulties, not the least of which will be the unwillingness of faculties to change habits respectable only because of antiquity. I am quite sure that some method involving the principle which you lay down is coming." This opinion is voiced by many of my correspondents.

The fundamental idea of the problem method is contained in the opening postulate: "At no time does one concentrate so thoroughy on the available data as when endeavoring to attain the solution of an absorbing problem; and at no time does one so take cognizance of pertinent facts as when equipping oneself to meet a definite situation." Does each teacher accept this postulate? Doesn't each teacher desire that his students shall concentrate maximally on assigned problems and take full cognizance of pertinent facts? Putting to one side personal predilections and prejudices does any teacher know of any demonstrated and therefore demonstrable method, other than the problem method, that will at once secure adequate concentration and cognition? If so, deans and teachers are anxious to learn about it; if not, why not enthusiastically embrace a method which will mean much to the student, even if it does seem to subtract a little from the teacher's *amour propre?* Let us be in the van, and work for the commonweal.

More Fallacies Concerning Hemorrhoids

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In a previous article some popular fallacies concerning hemorrhoids were noted. There are submitted herewith some other views which are equally erroneous and apparently as widespread. Thus, I hold that it is erroneous to believe:

1. That hemorrhoids are hereditary. A distinction must be drawn between a hereditary weakness in vascular tissue and the inheritance of actual hemorrhoids.

2. That extensive preoperative catharsis and enemization is a necessary preliminary to hemorrhoidectomy. Patients do much better with the very simplest kind of preparation.

3. That it is necessary to "tie up" the bowels following a hemorrhoid operation. In the average case that has not been subjected to preoperative catharsis the patient will *not* have a bowel movement for two or three days even if tincture opii is omitted.

4. That hemorrhoidectomy cannot be done as completely under local as under general anesthesia.

5. That rectal wounds will always heal by first in-

tention if they are sutured at the time of operation. As a rule, infection of the wound occurs, the sutures slough out, and we have a worse condition than would have existed had the wound been left open.

6. That there is a capillary form of hemorrhoids. Pathologically, this condition consists in a teleangiectasis of the mucosal capillaries.

7. That there is an arterial form of hemorrhoids. This condition is often the remains of a partially cured hemorrhoid in which the venules have been obliterated but the artery remains. The structure is really a polyp.

8. That it is required by law that the first bowel movement shall be painful. There are simple measures which may be taken to make this event painless.

9. That the injection treatment of hemorrhoids is invariably followed by sloughing. When this treatment is properly administered, sloughing never occurs.

10. That the only cause of "piles" is constipation.

11. That hemorrhoids occur in children under three years of age. Most of these cases are really prolapse and not hemorrhoids.

12. That the general surgeon operates on hemorrhoids with the same care he would use on almost any other condition. Usually the junior intern, who is the most inexperienced man on the staff, has these cases assigned to him. If the general surgeon operates at all, in most instances he never personally treats his case again.

13. That the average graduate in medicine ever had presented to him even an elementary study of the commonest of rectal diseases—hemorrhoids. In some grade A schools, the course in rectal diseases merely has a place in the curriculum—a final resting place. The course itself is never given.

CONCLUSION

The foregoing terse statements of what I regard as false opinions concerning hemorrhoids are submitted for the constructive value they may have in inducing the careful consideration the condition warrants. There is no surgeon of average skill who cannot successfully operate upon cases of hemorrhoids nor is there any general practitioner of average skill who cannot intelligently treat cases of hemorrhoids. It is with a full consciousness of this fact that the statements given above are offered. Thus while not inpugning the professional skill of our medical colleagues, I *do* recommend a more careful consideration of these cases and the exercise of sounder judgment in coming to conclusions as to the nature of hemorrhoids and the consistency of therapeutic methods suggested for their treatment.

540 PARK AVENUE.

Some Notes on Cancer*

Abstract from a Series of Articles Now in Course of Publication

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The literature on cancer has engaged my special and continuous attention since 1920. The study has impressed me with the fact that the physical aspects involved in the cancer problem seem to be of no less importance than the chemical ones and deserving of the most searching consideration. The study has also resulted in certain thoughts on the genesis of cancer, points of view—not theories. These points of view I have attempted to set forth in detail and with supporting references from the literature in a series of articles under the title given above. The contents of the series, especially the physical features, are condensed in the following paragraphs, all references being here omitted for the sake of brevity.

1. *The general viewpoint of the series.*—We have inherited cancer as a problem. Our forbears left it to us high up on a pedestal of exceptionalism and unapproachableness from which it frowns down upon us. The time has come, I believe, that we should repudiate the legacy. Cancer should come off its pedestal; it should be brought to earth; it should be made amenable to common medical conceptions.

Can this be done? It would appear not to be a hopeless task, in my judgment, to find a way of explaining cancer as we explain everything else in medicine, as a reaction; in this instance, (with the emphasis on the physical aspects) as the ordinary reaction of certain cells to changes in their environment.

Against this background the series has been built up. Papers of general review are followed by articles on the theoretical questions involved, and in a final article, on practical questions of therapy, the gained conceptions are tested on the basis of personal clinical experience, and on the experiences of others taken from the literature.

2. *Predisposition.*—The literature contains the deduction—from comparatively very small material, it is true—that about one fifth of all civilized human beings are predisposed for cancer. For our country, one fifth of the population would mean about twenty million predisposed persons, and as we are supposed to have with us constantly about two hundred thousand cases of malignant disease, these approximations would seem to indicate that about one per cent. of those predisposed are actually seized with cancer.

There seems to be a general and a local predisposition. General or systemic predisposition appears to be principally chemical; local predisposition, or the predisposition of individual organs, largely physical.

Local predisposition becomes manifest in the fre-

*A fifteen minute abstract of this abstract has been read, under the title, Thoughts of a Clinician on the Genesis of Cancer, before the nineteenth annual meeting of the American Association for Cancer Research, Albany, April 1, 1926.

quency of seizure with primary cancer of some organs, and the comparative immunity therefrom of others. The cause of the phenomenon appears to be mostly physical. Ordinarily immune are, it would seem, the organs which are actively at work more or less all the time: the heart, the spleen, the small intestine; in animals, e. g., the mammary gland of a dairy cow. In the lungs, the constantly moving parenchyma is hardly ever, the resting bronchial tree not infrequently, seized with primary cancer.

The importance of physical considerations seems to stand forth also from the predilection of solitary metastases for restful sites, such as the spongy bone of the vertebræ, the ends of the long bones, etc. The difference in the physical condition of the sites of predilection for, and of comparative immunity from, primary and secondary cancer would seem to reside in the respective degrees of activity of their circulation of blood and lymph, rapid circulation apparently going with immunity, sluggish circulation with seizure.

On the chemical side of predisposition I believe the genesis of cancer to be largely bound up with an unbalanced state of the salts of the serum; on the physical side with stagnation (see paragraphs 5 and 6 below). We are probably justified in stating: Without predisposition, no cancer!

The apparent exception (the development of sarcoma after a trauma in a perfectly healthy person) probably finds its explanation in the unbalancing of the salts of the serum by the trauma itself. Only when the trauma is sufficiently severe to be capable of producing the change of the serum does a sarcoma seem to develop under such circumstances.

3. *Release of the process and onset of the precancerous state.*—When in a generally predisposed person a locally predisposed organ becomes subject to the attack of a cancer inciting factor, i. e., to any factor capable of causing acute cell death, the reaction of the organ thereto would ordinarily seem to depend less on the nature of the assaulting factor than on the nature of the assaulted person. In a normal individual the lesion may heal and that will be the end of it; but in a predisposed person the lesion may heal imperfectly or may not heal at all, the abnormal reaction leaving behind it in the first instance an external or internal scar formed of tissue more or less pathological; in the second instance an open sore, an ulcer, a fistula, an eczema and the like; all of which residuary conditions are states of chronic irritation.

The rôle of the cancer inciting factor—which, from the viewpoint of the attacked cells, is always an external influence, be it exogenous or endogenous—has now been played. The acute phase of the process with its multiplicity of variegated and, among themselves, unrelated inciting factors has come to an end. The effect of the performance of all these inciting factors, different though they be individually, is probably always one and the same end result, namely, some kind of a chronic irritation. If the attack of such a factor upon a predisposed person does not result in chronic irritation, then that is likely the end of it, and nothing further happens; but if it does result in chronic irritation, then, beginning with that event, the subsequent process would seem to stand under the sway of always one and the same real and permanent cancer inciting factor—the chronic irritation. Henceforward the process would seem to be in its entirety always and completely internal. At this point, I believe, lies the onset of the precancerous state.

4. *Cancer inciting factors.*—What in the past has ordinarily been termed "cancer inciting factor" is stamped by the foregoing discussion as something pre-precancerous. Inasmuch as the precancerous state appears as a phase of doubtful outcome, because the process leading from the chronic irritation up to and including the beginning of malignancy may during any phase of the precancerous state be derailed and cease, obviously, the term "cancer inciting factor" is a misnomer for the factors which produce the acute lesion. All these numerous factors can have no direct bearing on the development of the cancerous process, for, whether their nature be chemical, physical or bacterial, whether it be an acid burn, a blow, a ray, or any kind of a bacillus, etc., these inciting, or perhaps better, "enacting," factors, are always as far removed from being the true inward cause of cancer, as the match which lights a grate fire is removed from being the cause of the heat which radiates from the burning coal. The term "cancer inciting factor," it seems to me, had perhaps better be reserved for the actual cancer inciting factor—the chronic irritation.

Restating the foregoing briefly: Upon the assault of the acute irritant (ray, tar, bacillus, etc.) the predisposed individual is apt to react with a chronic irritation, which latter then, in turn, becomes the irritant and elicits a secondary chronic reaction of the individual—and it is quite conceivable that this process should be repeated more often than twice, so that chronic reaction would be superimposed upon chronic reaction before at length the reaction occurs from which the precancerous developments originate. If this be correct, then the absolute futility of the search for the cancer bacillus would seem to become plainly apparent, equally so the search for the cancerogenous tar factor, or for any other (from the point of view of the cell) external factor, including embryonal rests, as the direct cause of cancer.

As far as bacilli are concerned, the only justifiable questions regarding their relation to cancer genesis would seem to be: 1, How do bacilli produce and maintain a chronic irritation? 2, In what does this chronic irritation consist?

5. *Reaction to chronic irritation.*—We have now reached the question: How in a generally predisposed individual does a locally predisposed organ react to chronic irritation? The reaction seems to be twofold. At the irritated spot the organ probably reacts, first, with a focus, or foci, of microscopic size, formed by the occlusion of the smallest local bloodvessels by stasis and of the surrounding lymph spaces by coagulation, both being eventually completely obliterated and the foci thereby walled off from the general medium; second, with chronic cell death in the foci.

It will be noticed that here we come for the second time in the process upon cell death. The first, *acute* cell death was found to have but a mediate relation to the process. This second, *chronic* cell death, to the contrary, in conjunction with the stagnation prevailing in the foci, appears as the factor probably underlying the cancerous process, as follows:

6. *Cell decomposition products.*—The cells killed in the foci by the chronic irritation undergo therein necrobiosis[1] and split into decomposition products of protein, the quantity of these products depending on the number of cells killed, i. e., on the intensity of the chronic irritation. The rapidity of the accumulation within the foci of the protein decomposition products depends on the degree of stagnation in the foci, this in turn, on the degree of impermeability of the foci, and the latter again on the intensity of the chronic irritation, so that in the last analysis the degree of chronic irritation governs. As it fluctuates, so necessarily fluctuates everything reacting thereto, including the strength of concentration of the cell decomposition products in the foci.

Immune organs are likely immune for the reason, in part, that their strong circulation prevents the formation of foci, or, if formed, prevents the foci from attaining a degree of impermeability sufficient to make possible the increase of concentration of protein decomposition products within them. The stagnation is missing.

7. *Cell decomposition products enforce cell multiplication.*—Decomposition products of protein have been found to induce the division of cells exposed to their influence, and the rapidity of cell multiplication has been found to increase with the degree of concentration of the products. In the case in hand the necrobiosis is assumed to take place in the foci. According to the degree of their occlusion, more or less complete stagnation supposedly prevails in the foci. The decomposition products within them have thus a chance to increase in strength of concentration. As soon as this degree exceeds, within the foci, the threshold of physiological tolerance of the exposed cells, these latter face the alternative of "die or divide," that being all a cell can do under the circumstances. If it survives, and if it is to survive, it must divide, and so must its daughter cells and generations of their descendants, because, on coming into existence, all these newly formed cells find themselves faced by the same focal medium which enforced the division of their progenitors. The cell multiplication evidently continues until cells arise which are in equilibrium with the focal medium, the latter then ceasing to be a stimulus of division for them. The multiplication of cells under the influence of the focal medium appears to be enforced upon the cells, and the part taken by a cell in its division seems here to be inert. Cell division in cancer is in all probability a passive phenomenon.

8. *Cell crowding.*—The question arises: How do the newly formed cells react upon one another? Inasmuch as all these cells are known to be lying loosely in the tissue, the demand for space of those last formed would appear to become a *vis-a-tergo* which pushes those previously formed out of the way. The movement of changed cells, starting from the foci, which is seen to occur in the tissue in the direction of least resistance, is supposedly due to this pushing from behind. The quantity of moving cells, and therewith the degree of cell crowding, depend on the rapidity of cell multiplication, i. e., as stated, on the degree of concentration of the focal medium.

[1]According to Virchow, necrosis means sudden cell death, the necrotic mass remaining in the tissue as a foreign body; "necrobiosis", slow cell death, the cells undergoing lysis in the tissue fluids and disappearing, leaving behind a defect.

Just beyond the threshold of physiological tolerance the proliferative process would probably amount to no more than a mild hyperplasia. From this minimum of cell crowding the proliferation would seem to rise with increasing strength of concentration of the focal medium, fluctuating as its degree of concentration fluctuates, and to attain eventually through an unbroken series of imperceptibly graded benign intermediate stages to the maximum of cell multiplication and consequent cell crowding, malignancy. Thus the motility of cancer cells and their accumulation in the tissue appear also as an enforced, as a passive phenomenon. Considered from the physical viewpoint alone benignity and malignancy would seem to appear merely as different degrees of cell crowding.

For the chemical aspects of the matter the reader is referred to the original articles.

9. *Growth in cancer.*—There is a fourth probably passive factor involved in the process of the development of cancer, namely growth. Is the term growth definite and clear cut? There is, first, the growth, e. g., of a green leaf, physiological growth, in which that which grows takes an active part. There is, second, the growth, e. g., of a heap of dead leaves, in which the part taken by the falling leaves in making the heap grow is passive, as is also the part taken by the heap itself in growing. So there is active growth and there is passive growth; active growth, in which that which grows, e. g., a green leaf, does everything; passive growth, in which that which grows, e. g., a waste heap, does nothing.

10. *Cancer a passive growth.*—A viewpoint has now been gained without resort to extraordinary assumptions, the whole argument being based on common medical conceptions, from which the factors, incessant cell multiplication, cell motility, cell accumulation and, as embodying all three, tumor growths, appear not as autonomous, anarchic, unaccountable, mysterious phenomena, but as the enforced reaction of cells to changes in their environment.

From this point of view a carcinoma appears as a waste pile of changed, living epithelial cells, the parenchyma, which have been pushed passively into the preformed interspaces and lymph channels of the connective tissue, the stroma, forced into them passively, because at the primary site of trouble the focal medium is believed to enforce cell division at such a rapid rate that the previously formed new cells are being crowded by the demand for space of the younger generations of new cells, and because by this *vis-a-tergo* the older cells are being pushed into whatever space offers a refuge.

Viewed from the physical angle, the question, from whence do cancer cells derive their growth energy, would seem open to a different interpretation than hitherto suggested. It has been observed and verified that growing cancer cells and resting epithelial cells have practically the same intake of oxygen. This observation appears to me to be the strongest kind of confirmation of the contentions here submitted. Those who made the observation looked at the matter from the chemical point of view; they accounted by the fermentative action of cancer cells for the supposed discrepancy in energy consumption. From the physical point of view, on the other hand, there appears to be here no deficiency of energy at all. The seemingly actively growing cancer cells use

no more oxygen than resting epithelial cells, because from that point of view they, the cancer cells, do not grow; because they, too, are believed to be resting; because probably nothing they do is active; because in whatever they do, be it multiplication, motion or accumulation, they seem to be using no energy of their own; because whatever energy they possess is probably imparted to them. What is really growing in cancer is, it seems to me, not the cancer cells, but their waste pile.

11. *Therapy.*—The question naturally arises: What benefit is there in looking at cancer from this point of view? If there is any virtue in the assumption of stagnation being an associated factor at the root of the process of cancer, then the obvious therapy for inoperable cancer—operable cases remaining emphatically the domain of the surgeon—would seem to consist of the restoring of the circulation of blood and lymph in, through and around the new growth, for the purpose of diluting the focal medium and of thus nullifying its cell multiplication enforcing effect.

Therapeutic procedures already empirically employed in unquestioned cancer cases, such as various means for turning the chronic into an acute inflammation, among them multiple scarification, cauterization and the like, would all seem to tend in that direction.

If returning improved circulation has a tendency to heal the cancerous process, as sometimes observed, then the assumption can not be far from the truth, that inhibited circulation—stagnation—was involved in causing the original lesion. Observed cases of spontaneous healing may, in part, also be referable to restored circulation.

But after even the complete regression of the new growth there would still remain the general predisposition of the patient to be taken care of. Here we come to one of the chemical aspects of the problem. General or systemic predisposition is probably always alkalosis, i. e., the overbalancing effect in the salts of the serum of potassium. Calcium being the antagonist of potassium, an intensive calcium therapy would appear indicated. This has already been suggested by others, and, in fact, sporadically practised in actual patients. But the administration of small doses of calcium at frequent short intervals over long periods of time would also appear indicated as a prophylactic treatment for suspected cases and for individuals with a family history of cancer, and further for all other persons in general, whose reaction on blood examination was found to exceed the normal alkalinity. Just how to administer calcium effectively has still to be learned, and the whole question of predisposition is in need of a more reliable statistical foundation.

12. *Blood examination.*—In view of what has been said, it is recommended to extend all examinations for blood chemistry to include, as a matter of routine, the testing for reaction, for salt content of the serum and for the percentage composition of the salt content.

As stated in the beginning, the facts used in the foregoing presentations are taken from the literature and the references are duly quoted in the original articles.

The Palliative Treatment of Inoperable Cancer

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While a great deal of work has been done in the last few decades on the development of the surgical and radiological treatment of cancer and in the experimental study of malignant neoplasms, the palliative treatment of cancer has received less attention than it deserves. It is superfluous to make the assertion that the only rational treatment of cancer is an operation, in suitable cases substituted or supplemented by irradiation. But a great number of cases are inoperable—a deplorable fact due either to the extent or localization of the tumor or to some concomitant ailments, such as certain heart diseases, diabetes, nephritis, and other conditions. In regard to these cases a fatalistic point of view prevails among the medical profession. The physician limits his action to prescribing narcotics and referring the patient to a röntgenologist. No wonder these unfortunate sufferers fall into the hands of selfappointed cancer specialists and other widely heralded charlatans who put forward unjustified claims of cancer cures. The therapeutic nihilism of the physicians should be dropped and a rule adopted to make the most strenuous efforts to carry the patient through the natural course of his disease with the greatest obtainable comfort, relief from pain, and other distressing symptoms. In order that the crusade against cancer be successful, it is of the utmost importance, not only to arouse the public to the necessity of an early diagnosis and treatment of cancer, but also to create in the medical profession the feeling that even in incurable cases of cancer much can be done for the patient without resorting to uncertain or useless agents and remedies.

Much stress should be laid upon the systemic treatment of the incurable cancer and the necessity of building up the resistance of the diseased organism.

General hygienic rules must be observed. Attention is to be paid to the temperature of the daily bath, especially in patients with external cancers, as hot water causes hyperemia and thus may promote the rapid growth of the tumor. Therefore, the temperature of the water in the bathtub should be kept as low as possible without causing an unpleasant chilling of the body.

If the patient cares for massage, the involved area should be carefully avoided by the masseur because the vigorous manipulations stimulate the growth. Dietary regulations should be rigidly enforced. The influence of the diet upon the growth of cancer in human beings has not yet been studied sufficiently, but

experiments on animals reveals that the diet is an important factor in the development and progress of malignant neoplasms. A diet rich in carbohydrates stimulates the growth, as has been shown by Haendel and Tadenuma (1-2); potassium in the diet has a stimulating effect, calcium retards the growth. A simple diet, free from or containing a small amount of animal proteins, is to be recommended. Cooked vegetables should form the bulk of the dietary of the patient, with abundance of fruit (except sour apples and grapefruit) and cereals; excessive use of coffee, spices, condiments, beans, sauerkraut, uncooked tomatoes, fresh bread should be forbidden. A thorough mastication must precede deglutition, especially in cases of cancer of the gastrointenstinal canal. Cachexia, whether regarded as a result of the production of toxins by the problematic cancer germs or of the action of unknown ferments or toxic products of metabolism, is a process of retention and resorption. To combat it, a large amount of distilled water either plain or with fruit juices should be taken. Charged drinks and alcoholic beverages are not advisable. It is not difficult to restrict the diet of the patient according to these rules without depriving him of the culinary enjoyments.

Persistent constipation is a factor in the etiology of cancer as put forward by Pauchet, Sir Arbuthnot Lane, Robert Bell and others. If the bowels do not move freely in spite of a liberal use of hot water and fruits, a mild physic should be taken, e. g., liquid petrolatum. The saline laxatives such as magnesium citrate, magnesium sulphate, sodium phosphate, epsom salt, should be avoided because due to their hygroscopic action they deplete the body by withdrawing from the cachectic organism a large amount of water.

One of the greatest problems the physician has to face in the palliative treatment of cancer is the pain. It should never be forgotten that the neurotic element enters into the complaints of many patients as in every chronic ailment; various bromide preparations give relief in such cases. Where the pain is not severe, suppositories containing antipyrin five grains and extract of belladonna one sixth of a grain are helpful. When the use of narcotics is unavoidable, the opiates should be saved for the later stages of the disease, otherwise the patient becomes so used to them that when the pain increases with the progress of the disease, no drugs will give him relief. The barbital group can be tried first; luminal-adalin tablets are effective in moderate degree of pain. If morphine has to be resorted to, preferably it has to be given by mouth or by rectum and the hypodermic injections spared for the latest stages of the disease where the prospective span of life is short. In extremely severe pain a combination of morphine with magnesium sulphate gives the best results. A syringe should never be placed in the hands of the patient. Once in a while a hypodermic injection of distilled water or saline solution may be given instead of the customary morphine injection with the same beneficial result.

In cancer of the oral cavity the selection of a suitable mouthwash is important; more attention has to be paid to the soothing than to the refreshing properties; most of the patent mouthwashes contain menthol, eucalyptol, thymol, and other irritating substances. Boric acid or still better an infusion of leaves of salvia—one tablespoon to six ounces of water—meets the requirements for a good mouthwash; where friable, decaying masses are present in the oral cavity, this mouthwash may be alternated with a two per cent. solution of tannic acid.

In cancers of the esophagus which are nearly always inoperable, the irradiation should not be relied on, but in addition to it a gastrostomy performed under local anesthesia. The feeding through the tube saves the sometimes ulcerating cancerous masses from contamination by germs carried with swallowed food particles and prevents the starvation of the patient. The impossibility of the ingestion of food affects greatly the mental balance of the sufferer; he should be allowed to chew the food and to eject it into the funnel attached to the gastrostomy tube; a syringe may be necessary to push the food through the tube into the stomach. The mastication supplies the saliva important for the predigestion of the food and according to the famous experiments of Pawlow causes secretion of appetite juice in the stomach. Spices, condiments, highly seasoned foods, cold drinks should be avoided; the patient may be given milk with cream, tea, weak coffee, all kind of cereals and vegetables, broth, fruit, preferably cooked, calves' brains, small pieces of chicken, lamb or veal.

In cancers of the stomach one remedy which was highly praised two decades ago and then fell into oblivion frequently relieves the distress in the epigastric region and improves the appetite; it is vinum condurango—one teaspoonful three times daily before meals. Where severe pain is present, large doses of bismuth should be tried before resorting to narcotics. In gastric hemorrhages a lavage with very hot water is more effective than the use of cold water; a few drops of adrenalin solution one to a thousand may be added. Application of heavy sandbags over the epigastrium frequently checks the hemorrhage instantaneously.

In inoperable cancers of the rectum a palliative operation—colostomy—is often indicated; it can be performed in a few minutes under local anesthesia; the operation relieves the cancerous masses from the constant irritation of fecal material and from the resulting congestion of the mucosa; the life may be prolonged, the pain diminished and the application of radium facilitated. Low enemas should be employed daily to remove the necrotic, foul smelling masses; warm chamomile tea serves this purpose best. In hemorrhages resulting from the cancerous growths of the urinary bladder heavy sandbags should be applied to the hypogastrium; they are much more effective than the icebag. This treatment may be supplemented by a lavage of the bladder with hot water; icewater also has hemostyptic properties, but it irritates the bladder and causes distressing symptoms. Adrenalin has little effect, probably because of the lack of elasticity of the bloodvessels within the hard cancerous masses. The instillation of a few cubic centimetres of blood coagulant of animal origin, such as thromboplastin, coagulen, or fibrogen, through a soft rubber catheter may prove successful. Intravesical procedures such as thermocautery or diathermy, belong to the domain of the genitourinary specialist.

As to the local treatment of external cancers, the principle should be carefully observed not to apply any remedies which may irritate or stimulate

the granulations; ointments containing scarlet red, silver nitrate, or balsam of Peru have to be avoided. Various arsenic pastes have been used for local applications since ancient times. Probably the best known form of these applications was the Zeller's paste which contained arsenic and mercury; Zeller recommended silicium internally in addition to the local use of his paste. Intoxications from the absorption of arsenic paste has repeatedly been observed. Its beneficial action depends entirely upon the depth to which tissue is destroyed.

Among the liquid caustics chromic acid occupies a prominent place; it inflicts relatively little pain and checks to a certain extent the excessive growth of the cancerous tissue. Formalin also has therapeutic value in the palliative treatment of the cancer. According to the recommendation of Powell (3) it should be used in a two per cent. aqueous solution which is prepared by adding nineteen parts of distilled water to one part of commercial formalin.

A more modern palliative treatment of cancer consists of the application of salt paste which was first recommended by Martenstein for the treatment of lupus vulgaris. Andersen (4) suggested its use for the local treatment of cancers, basing his theory on two considerations. First, a retention of chloride is known to be a general method of defense of the organism, seen in various infections, inflammations and other pathological processes; furthermore, according to the Arndt-Schultz's law, an excess of salt damages the cell to such an extent that the destructive process becomes irreversible and the cell perishes; second, the greater the salt contents of the tissues, the greater their susceptibility to irradiation; therefore, an impregnation of the morbid tissue with salt previously to the application of the x ray or radium may increase the sensitiveness of cancer to the action of the rays. A layer of salt paste one quarter to one half cm. thick is applied to the cancerous masses and the surrounding tissues protected with borvaselin. The formation of an eschar is prevented by covering the dressing with wax paper or some other impermeable substance. To stimulate the demarcation and elimination of the necrotic masses, a three per cent salicylvaseline is applied after a few days. There are two disadvantages of this method: first, a parenteral salt fever, well known to pediatrists, may occur; second, the treatment is painful and causes thirst and local edema. However, judging from the reports published by Andersen, the salt paste seems to have a remarkable influence upon cancers, at least retarding the progress of the growth and it is worth while to apply this method in suitable cases.

The fetor is frequently one of the most annoying symptoms of the cancer—it affects the patient himself as well as his family. In the control of fetor excellent results may be obtained from the local applications of granulated sugar; the only objection to its use may be the fact that the absorbed sugar can serve as nourishment for the cancer cells and thus contribute to their rapid growth and multiplication. Therefore, its use should be confined to very advanced stages of the disease. Equally beneficial results may be obtained from the use of powdered coal of animal origin (*carbo animalis*), which has great deodorizing properties. This socalled kitchen treatment (salt, sugar, coal) is valuable in combating the sometimes profuse discharge and the terrific fetor of cancerous masses which make the patient unbearable to society and his own family.

For the same purposes two other substances may be used as a dusting powder with gratifying results—permanganate of potassium and resorcin. The latter also has analgesic and antiseptic properties. It is surprising how the control of fetor improves the color, the appearance and the mental condition of the patient.

Among the physical agents phototherapy in the form of sunlight may be applied as a deodorant by means of a concave mirror, as employed by William Becker (5). The thermocautery also destroys the necrotic tissue and may be used not only for the radical removal of the neoplasms, but also in inoperable cases to check at least temporarily the rapid growth of cancerous masses. The use of medical diathermy is generally not advisable for the palliative treatment of cancer, as the rise in the local temperature of the tissues causes an active congestion and stimulates the growth; surgical diathermy plays an important rôle wherever radical destruction of the cancer is attempted.

There is an endless number of methods of treating cancer, but most of them are of very problematical value. Mineral cancer cures, such as the use of lead, recommended by Blair Bell, gold, introduced by Ruportail and Duparcque, were formerly in vogue, but have fallen into discredit and are newly invented every few years. The biological methods, e. g., various sera, toxins, ferments, as well as chemotherapy and bacteriotherapy, seem to have as yet little therapeutic value.

CONCLUSIONS

It cannot be too strongly emphasized that an early operation is the only procedure that has been proved to be a cure for cancer and that postponement of an operation by a physician who made a correct diagnosis should be regarded as criminal negligence. From the foregoing review of methods recommended for the palliative treatment of cancer the conclusion may be drawn that in inoperable cases the fatalistic point of view and the prevailing pessimism are not justified and that much can be done to relieve the most distressing symptoms such as pain, discharge, fetor. The task of curtailing the pernicious activities of irregular practitioners and other unscrupulous persons and of preventing the unfortunate patient from adopting various cults and pseudosciences can be accomplished only by the proper education not only of the public but also of the medical students. A special course on cancer should be included in the curriculum of every medical school; such a course should comprise the various theories of the origin of cancer, its surgical, radiological and palliative treatment.

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Multiple Osteochondromatosis

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Children are comparatively immune to neoplasms. Of the new growths that do occur in early life, tuberculoma, glioma or gliosarcoma may affect the brain. Sarcoma, hypernephroma, carcinoma and cysts may start in the kidneys. The liver may give rise to carcinoma, sarcoma and endothelioma. The spleen, intestines, peritoneum, lymph glands and testes may be the seat of various benign or malignant growths. Bone may give rise to osteoma, while cartilage may produce chondroma or osteochondroma as in the following case which is reported because of its rarity, unusual multiplicity, and destructiveness.

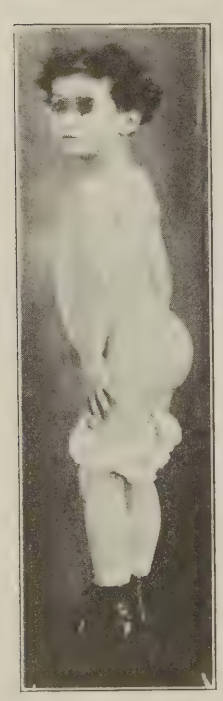

FIG. 1. — Multiple osteochondromatosis. Child six years old. Marked lumbar lordosis, causing the body to be thrown forward and the buttocks unusually prominent. Some bony tumors could be seen at the wrist and at the upper third of the humerus.

CASE.—B. R., a girl aged six. The family history has no bearing upon her condition. She was born in Russia during the political upheaval, at a place where the population was extremely harassed and food and shelter were exceedingly bad. She was of full term, normal birth and breast fed for seven months. Then she was fed on whatever food could be obtained. The general development was slow and she began to walk at two years of age. At that time it was noticed that her gait was wabbling and she had difficulty in moving the left leg. A short time after, it was found that she had little hard growths along various bones. During the last two years she had scarlet fever, measles, and chickenpox.

On examination, at the age of six, the child appeared small but of fair mentality. She limped on walking, dragging the left leg. There was a marked lumbar lordosis with an unusual displacement backward of the hip joints as is shown in Fig. 1. The head was of the rachitic type with no tumor growths. There were no gross deformities of the chest. Beginning with the clavicles and tracing downward along the ribs and the upper and lower extremities, the skeleton was found to be studded with hard irregular painless tumor masses ranging from some that were two by four cm. to others that were barely palpable. They were bilateral and more or less symmetrically arranged localizing mainly at the costochondral junctions and at points of greatest bone growth, as is shown in Figs. 2, 3, 4, 5. The left hip joint was ankylosed and the left leg was shorter by one half inch. Both ulnar bones were shorter than their corresponding radii. There were no fractures. The internal organs were normal and there were no abnormalities of the teeth, lymph glands, thyroid or thymus. The blood count and the urine examination showed nothing abnormal. The Wassermann and the tuberculin tests were negative. The calcium and the phosphorus content of the blood were respectively 11.6 and 3.95 mg. per 100 c.c. of blood. Weight forty pounds. Height thirty-three inches.

ETIOLOGY OF OSTEOCHONDROMA

This type of neoplasm is of special interest because of its occurrence in early life as a congenital or acquired new growth, its tendency to wide distribution, and its regressive character when the period of skeletal growth has reached maturity. It is caused by some disorder in the growing cartilage. Through some abnormal stimulation a number of scattered bits of cartilage proliferate, giving rise to multiple benign tumor growths. Osteochondromatosis seems to bear some etiological and pathological kinship to rickets, osteochondritis and chondrodystrophy.

Osteochondromata, whether originating from normal cartilagenous areas, or from misplaced islands

FIG. 2.—A large calcified cartilagenous tumor in the head and neck of the left femur with marked coxa vara. A similar growth but of lesser degree at the right femur.

of cartilage, always produce their respective type of cartilage which, in the majority of cases, is of the hyalin variety. From the periosteum the tumors may grow into the medullary cavity or they may push their way outward. In some cases, they may be medullary in origin and grow within the canal. The

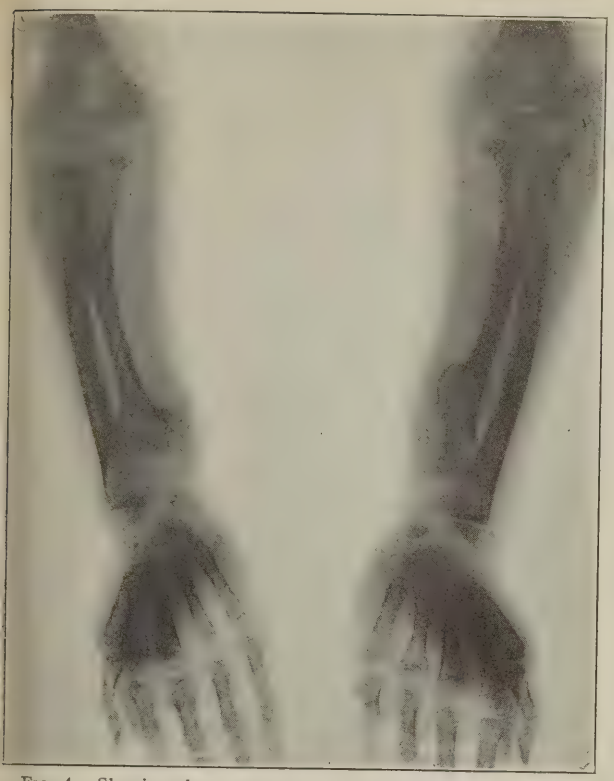

FIG. 4.—Showing the presence of tumor masses at the upper and lower ends of both tibiæ and fibulæ in osteochondromatosis. Same case as in Fig. 1.

FIG. 3.—Both ulnar bones are shortened at their lower ends and terminate in tumor masses. There is also a tumor at the lower end of the right radius.

lesion usually affects either end of a long bone and produces cartilagenous, cauliflower growths. After reaching a certain stage in development they undergo calcification. While occasionally osteochondromata are of the nature of a simple hyperplasia, and are few and limited, generally, however, they are of the character of a true neoplasm, widely spread, but not malignant. Malignancy, though rarely, may occur.

DIAGNOSIS

The diagnosis of osteochondromatosis rests on the nature and consistency of the tumors, their multiplicity, and their tendency to affect chiefly the long bones. Pathological fractures are not uncommon and are of diagnostic importance. The röntgen ray is essential to a correct diagnosis. It shows a proliferative, multilocular, cysticlike growth with sharply limited borders. Osteochondromatosis should be differentiated from exostosis, deforming osteochondritis, rickets and chondrodystrophy by the clinical course and by the röntgen ray findings. The absence of new bone formation is against exostosis. Flattening of the epiphysis of a hip joint is typical of deforming osteochondritis. Epiphyseal saucershaped expansion is present in rickets and a general stunting of bone growth is diagnostic of chondrodystrophy. The age period is important, as osteochondromata are seen most commonly between the ages of five and fifteen years. Whether in this case the osteochondromatosis was of congenital origin or was acquired in early life as a result of the extremely bad conditions of living, is difficult to tell. The fact that the disease was noticed very early in life points to a congenital origin.

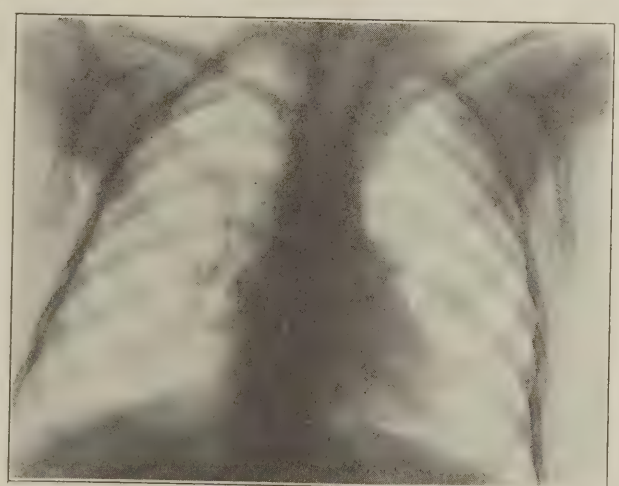

FIG. 5.—Osteochondromata at the inner ends of both clavicles, lower angles of scapulæ, upper third of both humeri, anterior end of second rib on right side and first and second rib on left.

PROGNOSIS

The prognosis depends on the nature of the tumors, whether benign or malignant, their size and location and the amount of damage they may do to the internal organs. Tumors arising from the cartilage of the respiratory tract or those invading the medullary cavity or affecting the joints or pressing on the central nervous system have a poor outlook.

TREATMENT

There is no specific or definite treatment for these cartilagenous growths. Thyroid and actinotherapy may be tried.

213 EAST BROADWAY.

A Case of Pyelonephritis with Persistent Hematuria

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Pyelonephritis is ordinarily described as an advanced stage of pyelitis in which the inflammatory process involves the renal structure proper, as well as the pelvis and calyces of the kidney. The case we are presenting, besides illustrating a typical case of pyelonephritis, is remarkable because of macroscopic hematuria persisting for nearly two months, a rare occurrence. It might be profitable to precede the case presentation with a few general remarks on pyelitis.

ETIOLOGY

The exciting cause of pyelitis is usually the Bacillus coli the Bacillus tuberculosis or the gonococcus. The other less frequent organisms are the staphylococcus, streptococcus, and pyocyaneus. The first three named bacilli produce acid urine and the others alkaline.

There are numerous predisposing factors, such as torsion of the uterus, renal calculi, neoplasms, pregnant uterus, all causing blockage with subsequent retention and renal pelvic inflammation. The rôle of the pregnant uterus in the causation of pyelitis is discredited by some gynecologists who maintain that pyelitis, in obstetrical practice, occurs in early as well as late pregnancy, rendering induction of labor for the relief of pyelitis of doubtful value. Others, on the other hand, justify the emptying of the uterus in certain selected cases, because of the intimate relationship of pregnancy and proper renal function.

In childhood, pyelitis is often associated and confused with enteritis. It would appear that the colon bacillus travels through the lymphatics into the kidney pelvis setting up an inflammation. However, insufficient studies have been made, both serologically and biologically, to determine whether the Bacillus coli is exogenous or endogenous. The Koch's bacillus seems to follow the hematogenous route and very rarely ascends from the lower genitourinary tract. Leon Herman believes that tuberculous cystitis is usually secondary to kidney infection. Girls are more often affected than boys.

The ascending route is chosen by the gonococcus. Occasionally acidity or alkalinity of urine may induce pyelitis, also residual urine in apparently normal bladders may induce pelvic infection. Cold and damp are also etiological factors.

SYMPTOMS

The symptoms of pyelitis are usually irregular fever, pain in the lumbar regions, unilateral or bilateral tenderness, with the possible detection of a soft mass produced by kinking of the ureters or subcapsular collection of pus. Emaciation, secondary anemia and asthenia are quite prominent after the second or third week of the disease.

DIAGNOSIS

The diagnosis of pyelitis is at times easy and at times difficult. It is often confused with typhoid fever. Our patient had a leucopenia and a mildly positive Widal suggesting enteric fever. However, leucocytosis is the more constant finding in pyelitis, and the pulse is rapid in contradistinction to typhoid fever. Malaria, especially in malarial districts and seasons, is often confused with pyelitis because of periodical chills and fever, but the absence of plasmodia, and the blood picture should clarify the diagnosis. The positive finding of pus cells in addition to the symptomatology described is sufficient clinical criterion for diagnosis. It may be possible that a twenty-four hour specimen will fail to reveal pus cells or pyuria, owing to ureteral blockage, and the urine will appear perfectly clear. However, repeated examinations will show pus urine or macroscopic blood as in our case which for eight weeks showed bloody urine to the naked eye. The long tailed cylindrical renal cells at one time retained as diagnostic of pyelitis are no longer of value, as cystitis may coexist with inflammations of the upper genitourinary tract. When hyaline or granular casts and erythrocytes are present in the urine, the diagnosis is usually that of pyelonephritis. The urine is usually acid except in staphylococcic, streptococcic, or pyocyanic inflammations.

The modern diagnostic methods include double catheterization of ureters with separate collection of specimens; pyelography and the finding of the specific organism, both culturally and by animal inoculation.

The x ray often reveals the presence of pyelitis by the annihilation of the characteristic angulations of the injected calyces and papillæ. Difference in postures may show ureteral kinking but will not affect the angulated appearance of the normal pelvis. Doubtless pyelography has come to stay.

Cystoscopy is valuable as revealing the coexistence of cystitis, the presence or absence of calculi, blockage due to structure or external pressure of the ureters.

TREATMENT

The treatment of pyelitis depends largely on the requirements of the individual case. The alkaline treatment, consisting chiefly of the administration of potassium citrate, especially in the early febrile stages of the disease, is according to many clinicians the most satisfactory method together with supportive and eliminative measures. Of the urinary antiseptics massive doses of hexamethylenamine (gr. fifteen every four hours) in combination with acid sodium phosphate (one half dram every four hours) has given satisfactory results in some hands, the formaldehyde being liberated in acid medium. Hexalresorcinal has of late come to the front. Leonard advises that its use be preceded by the administration of alkalies.

Autogenous vaccines have also been used. Urologists use pelvic lavages, with one per cent. silver nitrate, or mercurochrome. In our experience such lavages have been followed by a remission of fever and general improvement. The use of mercuro-

chrome is sometimes followed by chills. When the anemia is severe blood transfusion is indicated. Our patient showed most remarkable improvement after transfusion. Transfused blood is a most potent diuretic possibly by increasing the nourishment of the renal excreting cells.

CASE REPORT

CASE.—Mrs. A. C., aged twenty-five years, Italian, housewife, weight one hundred and ten pounds, height five feet two inches, about November 15, 1925, or a month preceding admission to the Methodist Episcopal Hospital, began to complain of headache, fever, edema of face and ankles; scanty and bloody urine. The following week digestive and respiratory symptoms supervened. Epigastric distress was followed by vomiting. Milk and liquids could not be retained. An unproductive cough and a sense of thoracic constriction were other complaints. Eleven days after the incidence of her illness she had one chill. In the third and fourth weeks there was a general subsidence of all symptoms but the urine remained bloody, abundant and with a thick sediment. At no time did she complain of dyspnea, hemoptysis, hematemesis, enterorrhagia. Menstruation, however, occurred twice in twenty-eight days and was rather scanty. There was occasional complaint of dysuria, urgency and frequency of urination.

Menstruation was usually regular, five days, occurred every twenty-eight days, flow moderate, no clots. One pregnancy, one child, no miscarriage. Dysmenorrhea before marriage. During labor eight months ago patient was "blind and deaf" for five days; probably due to eclampsia.

Had measles during infancy, and frequent attacks of colds. No other disease was remembered. No scarlet fever. Home conditions were hygienic and congenial. Did housework. Meals were regular; no alcohol or highly seasoned foods were used.

On admission to the Methodist Episcopal Hospital on December 16, 1925, patient was much emaciated, anemic, and dyspneic. Eyelids were slightly puffed up. No edema of the ankles. She had an impairment of the right base which cleared up in five days. The heart showed no enlargement or displacement but a soft systolic murmur was heard at the apex. P^2 more accentuated than A^2.

Liver not enlarged, spleen not palpable, kidneys *in situ*. No masses, tenderness, or rigidity present. The extremities were negative for edema and reflex abnormality.

Gynecological examination showed the uterus small, anteflexed, no masses on either side, slight erosion of mucous membrane, vaginal wall soft and pliable.

Laboratory findings (December 22, 1925): Hemoglobin 45 per cent., red blood cells 3,000,000, white blood cells 4,750, blood coagulation time three minutes. Blood sugar 0.112, blood urea 12.5 mgs., blood Wassermann negative. Phenolsulphonephthalein first specimen volume = 130 c.c. 10 per cent., second specimen volume urine = 70 cc.c. 10 per cent. Volume of urine 2.650 c.c. Albumin 0.45 per cent., 1.92 grms. 2,650 c.c. Urine cultures showed Bacillus coli negative for Bacillus typhosus. Blood Widal was negative for typhoid, paratyphoid A and paratyphoid B. Blood culture negative.

Right and left tonsil cultures showed many non-hemolytic streptococci, pneumococci and a few normal mouth organisms. Some pericementitis about the upper right molar which was carrying the bridge. No abscesses present and no root absorptions.

Blood count January 2, 1926, hemoglobin 30 per cent., red blood cells 1,100,000, white blood cells 7,650.

On January 9th patient underwent a blood transfusion operation receiving 416 c.c. of blood from her typed sister. Following the transfusion the patient had a marked chill but on the next day her improvement was remarkable. Her general appearance and color seemed to have improved like magic.

On January 13th, blood count hemoglobin 44 per cent., red blood cells 1,100,000, white blood cells 5,800, polymorphonuclears 73 per cent., small lymphocytes 20 per cent., large lymphocytes 14 per cent., mononuclears 2 per cent., transitionals 1, eosinophiles 0.

On January 21, 1926, her hemoglobin had ascended to 44 per cent., red blood cells 1,950,000, and white blood cells 5,700.

On January 13th the patient was cystoscoped with the following findings: Intense pallor of mucous membrane of bladder. Neither ureteral orifice showed any evidence of old hemorrhage. No obstruction to ureteral catheters—kidney reflex normal. Passage of ureteral catheters not followed by hemorrhage. Specimen of right and left urine sent to laboratory for culture routine and injection of guineapig. Cultures of both right and left urines were negative.

Routine of right: Color lemon: translucent-clear; reaction neutral; specific gravity q.n.s.; albumin cloud; sugar none; epithelial cells renal three plus; leucocytes few; red blood cells two plus.

Routine of left: Color lemon; translucent-clear; reaction neutral; specific gravity q.n.s.; albumin cloud; sugar none; epithelial cells renal; leucocytes few; red blood cells two plus.

From December 16, 1925, to January 14th temperature had been of the irregular septic type, oscillating between 98° F. and 101° F. Before admission temperature had followed practically the same curve.

Repeated urine examinations for four weeks following admission showed macroscopic blood. Trace of albumin, hyaline, granular casts, renal epithelial cells and urates for one week with many pus cells. Previous to her admission the patient had persistent bloody urine.

Since January 14, 1926 the patient's temperature has been normal with an occasional flare up of 1° or less. Hematuria macroscopic and microscopic have disappeared completely. The treatment followed has been the alkaline as outlined above, with daily injections of iron citrate and general supportive treatment.

This case represents pyelonephritis with hematuria persisting for two months. Subsequent urine analyses have been practically negative. Patient has steadily improved in weight, color and strength. Her blood pressure which was 160 over 110 in second week of the disease became 130 over 90 after two months' treatment, coinciding with subsidence of fever, clearing of urine and general well being.

An Unusual Case of Fibroadenoma of the Breast

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The following case presents several features of interest and offers scope for speculation on the primary pathological lesion.

Case.—The patient, a married woman aged fifty-five, was sent to me on account of a swelling in the right breast. She told me she had had trouble with that breast for thirty-two years, ever since the birth of her first child. She was unable to suckle the child with that breast, as the milk did not agree with the child. She was told at that time that the breast engorged, but at no time as far as she could remember was it obviously inflamed and it certainly was never lanced: nor was any abscess present. From that time onward she had had an intermittent discharge of pus from the nipple, which prevented her feeding her seven subsequent children at that breast. She was certain that she had never noticed any lump in that breast until about two months before consulting me and at that time she discovered a lump about the size of a hazel nut. This lump became gradually larger for about five weeks and then increased rapidly in size till at the time she consulted me it was the size of a hen's egg.

The mass on examination was found to be in the upper and outer quadrant of the right breast, was of hard consistency and could be palpated with the flat hand. It was adherent to the reddened, inflamed overlying skin but was not adherent to the underlying pectoral muscles. The nipple was retracted. No glands could be felt in the axilla.

In view of the hardness of the tumor, the retroaction of the nipple and the age of the patient, a rapidly growing carcinoma seemed the most likely diagnosis. Nevertheless, the long history of discharge from the nipple and the obvious inflammation of the overlying skin made one wonder if a chronic inflammatory condition could suddenly have flared up.

At the operation an incision was made into the tumor and thick pus at once welled out. The surrounding tissue still felt so densely hard as to be suspicious of carcinoma and the complete operation was decided on, and after changing gloves and instruments the axillary glands and fat, the breast and both pectoral muscles were removed. No enlarged glands were found in the axilla, but on incising the specimen after its removal, its color, consistency and the way in which it appeared to be infiltrating a part of the surrounding tissue all seemed to support the diagnosis of carcinoma. A part of the growth was definitely encapsulated, but no capsule could be distinguished over the remainder. In some areas an appearance as of hyaline degeneration was presented. Culture of the pus gave a pure growth of Staphylococcus aureus, and that it remained still virulent after its long incarceration in the breast was shown by the fact that the wound suppurated in the area from which the growth had been removed and in no other part. This localized suppuration delayed healing for about a fortnight, but in all other ways convalescence was quite uneventful.

It is worthy of note that since the operation the patient has had no recurrence of the indigestion by which she had also been troubled for many years prior to the operation.

The following pathological report has been supplied to me by Dr. D. S. Brough: "The breast showed a definite tumor about the size of a hen's egg. On section the growth was seen to possess a fairly well marked capsule, was firm in consistence, and to the touch rather suggested a scirrhous carcinoma. Paraffin sections stained with hematin and eosine showed no evidence of carcinoma. The growth appeared to be an adenofibroma with a considerable amount of stroma. At one edge of the growth there was evidence of both acute and chronic inflammatory change, much round celled infiltration being present in some parts while in others polymorphous leucocytes were prominent."

There is, then, in this case a clear cut history of infection which had been present in the breast for thirty-two years and had remained active during that time, as evidenced by the frequent occurrence of discharge from the nipple. No lump had been present for more than three months, as far as the patient was aware, and it is probable that the attention given to the breast as a result of the discharge would have brought to light at an earlier date any but the smallest lump.

Has the fibroadenoma developed in consequence of the infection, has it developed merely in association with the infection, or has the infection settled in a preexisting fibroadenoma which acted in the breast as a *locus minoris resistentiæ?* To these questions I can give no definite reply. It seems unlikely that the fibroadenoma could have existed for thirty-two years without being noticed, for during that time it ordinarily would have grown to a very considerable size. Furthermore, the very definite history that after the discovery of the lump it grew slowly for some weeks and then suddenly grew rapidly suggests far more that the fibroadenoma became infected suddenly by the preexisting infection. In only three out of one hundred cases of hard fibroadenoma observed by Bryant (1) was the tumor first discovered after the age of fifty. Further, "it is probable that nearly all fibroadenomas arise between the age of puberty and thirty years," so that if this statement is true of this case it is still of interest that the condition should remain quiescent for so long a time.

While it is as yet too short a time since the operation for one to assert that the indigestion was permanently cured, it would appear that there has been a fairly definite relationship between this and the chronic infection. Certain forms of chronic infection, notably dental, are now well recognized as being causative of gastric symptoms, and there seems no reason why in this case these latter should not be attributed to the chronic intoxication.

Curiously enough, in this case the patient gave no history of trauma as a reason for the development of the lump and no scientific cause for the sudden flareup of the infection is obvious. Might it not be that the socalled trauma came from within the breast and consisted of the dislocation of the breast tissues resulting from the growth of the tumor?

I have been unable to find in the literature a report of a parallel case and put this case on record partly for its intrinsic interest and partly because it shows that even exploratory incision of a tumor is not always adequate to enable one to negative a diagnosis of carcinoma.

REFERENCE

1. Bryant: Choyce, *System of Surgery*, 1915, Vol. 2, p. 36.

Plastic Surgery of the Nose*

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Portland, Oregon

(*Concluded from page* 421)

The amount of material at hand is much greater than when rib cartilage is used. To build up the nasal bridge and glabellar region in one patient it was necessary to use seven pieces of celluloid one tenth of an inch thick and having a combined surface area of approximately five square inches. It would have been rather difficult to obtain so much rib cartilage from a patient.

The usual procedure to build up a nose has been to make a transverse incision in the glabella, pass an instrument down the anterior border of the nose, insert the properly shaped support from above and then close the wound with one or two sutures. This operation was done with cartilage by another surgeon to the patient represented in the illustrations.

The operation which I prefer is as follows: An incision is made on the inner surface of the ala on either side just within the nostril. A piece of fine silk is then passed through the edge of each flap and tied loosely so as not to produce pressure on the edges. These long sutures are used as retractors, thereby reducing trauma to a minimum and practically bringing the incision outside of the nasal cavity. The incision is deepened forwards until it reaches the anterior surface of the cartilage under the skin and adherent tissues. Through this incision all further procedures are carried on. With the dissector the superficial tissues are separated from the nasal cartilage and the nasal bone as far as indicated, being sure that the dissection is carried well down to the tip of the nose on both sides. For this purpose a dissector bent at right angles is used. When necessary portions of the laterally displaced nasal bones are removed with a spokeshave or chisel.

The properly shaped celluloid which has been prepared before starting the above steps of the operation is then passed up into place through the original incision. Should the celluloid when placed in position be found to be too large it is withdrawn, reshaped and replaced. Before placing the cartilage in position two silk or linen sutures may be attached to it one at either end. These sutures are passed out through the skin beyond the upper and lower ends of the graft and aid in placing it properly, and are tied over bits of gauze. These hold the graft in its proper position and prevent shifting which may take place if not guarded against.

*Read before the Portland City and County Medical Society.

When cartilage is used it may be obtained from the eighth rib on the right side or from the sixth or seventh. Some surgeons prefer to use that from the left side but most operators select the right as not being so near the heart.

When the celluloid is in its place the retraction sutures are removed and the mucous membrane closed with two or three horsehair stitches. A small piece of gauze held in place over the graft, with adhesive plaster, is all the dressing required.

It often happens that at the time of the accident producing the deformity other injury is done and when this is the case it must be corrected also. In the patient represented by Figs. 3 and 4 the left ala was torn from its support to the lip and when healing had taken place the left nostril was three sixteenths inch wider than the right. This was corrected by excising an elliptical section from the upper lip within the left nostril including the scar, separating the tissues well from the upper maxilla and suturing.

The alæ were thick as was also the columna and these were later reduced in size by excising elliptical sections, separating the underlying tissues well and suturing.

It is important that a second operation be not undertaken until the previous procedure has entirely healed else infection supervene. It is also important that an attempt be not made to do too much work at one time, lest the vitality of the tissues be impaired.

A certain amount of judgment as to the artistic must be possessed by the surgeon so that when the work is completed the nose reconstructed will be in keeping with the other features.

Some time ago a young man applied for treatment of his nose. The deformity consisted of an angulation of the lower portion. My judgment was that the proper correction consisted of lining up the lower portion of the nose with the upper giving a straight nose properly placed on the face. The patient desired that I remove the prominence of the angulation and thus apparently straighten the nose but producing a result so that the nose in its entirety would appear as if placed at an angle on the face. As the patient insisted on having the operation which I considered inadvisable and incorrect, operation was refused. One must be on their guard about following the advice of patients but must consider well from the standpoint of ultimate results. It may be the pa-

tient's nose in the beginning but it is your handiwork when the task is completed.

The shortened upturned nose is an interesting deformity. This may be the result of saddle nose or due to a short bridge. The condition may be congenital or due to faulty development, or the result of trauma. These noses vary as to the degree of disfigurement and as in all plastic work the treatment must be fitted to the conditions present.

When the lower border of the nose is tipped far upwards, that is, when the anterior border of the nose is much shortened, it may be necessary to supply a framework as described but a great many patients do not require this. The aim of the corrective procedures being to advance the tip of the nose and bring it down together with its adjacent lower alar border, several methods varying in detail are available.

When the deformity is small an inverted V incision may be made over the nose, the apex high on the bridge and the limbs ending near the nasolabial junction on either side. The under tissues are then well separated and the incision is sutured in the shape of the letter Y inverted.

In another one of my patients a different method was found necessary. The patient had a piece of rib cartilage inserted in her nose by another surgeon, the incision being made transversely in the glabella. The scar of the incision would have been less conspicuous had it been made longitudinally. This cartilage undoubtedly raised the bridge of the nose but was insufficient to remove the pug effect.

I operated as follows: An inverted V incision was made on each side of the nose the base extending from near the tip to near the junction of the ala and the cheek. The incision then extended onto the cheek. The issues were well undercut. The V was sutured as a Y inverted, forcing the tip of the nose downwards.

I wish now to discuss a class of cases which come infrequently to the surgeon for operation for reason that the deformity is very slight and most individuals would not consider it of sufficient importance to have corrected. I refer to that kind of nose in which the columna is low, extending onto the lip shortening it. In this type of case an inverted V incision is made on the under surface of the nose, the apex near the tip and the base along the nasolabial junction. The underlying tissues are separated and a portion removed, the wound being sutured as an inverted Y with horsehair. No dressing is required. The result was highly satisfactory to one of my patients, and while the difference was slight it was enough to give a much better appearance to her face. The lip was lengthened one tenth of an inch.

A nose whose tip hangs low over the lip may be brought up in either of two ways. When the cartilage extends low it must be excised preferably through an incision in the mucous membrane. When the drooping is low, due to relaxation of the soft tissues, these may be excised by making a double inverted V incision, the apices near the glabella and the limbs on each side meeting at the nasolabial fold. After removing sufficient tissue, careful suturing will produce a practically invisible scar. Remove the sutures early.

One of the commonest nasal deformities is that of the humped or round shouldered nose. The location and degree of the deformity varies. It may be the cartilage alone that is enlarged or the nasal bone, but usually both are involved in varying degrees.

In one type of cases the protuberance is chiefly of the nasal bone shading into the cartilage. The second involves both nasal bone and the cartilage. Both are operated in the same manner varying the amount of tissue to be removed to meet the case. Formerly a longitudinal incision was made along the anterior border of the nose. Soft structures were separated down to the bone and cartilage and the periosteum and perichondrium were then separated and retracted. With a fine saw, chisels and a gouge the required amount of bone was removed and the scalpel reduced the cartilage to the desired size and shape. The periosteum and perichondrium were replaced as were the overlying tissues and the skin was carefully reunited. A preferable method of operating is by making an incision inside the nostril along the anterior border, just above the mucocutaneous junction and continuing up through the ala until the anterior border of the cartilage is reached. The dissection is then continued, separating the nasal bone and cartilage from the overlying tissues for a sufficient distance above, below and on both sides to give space in which to work. A spokeshave is then introduced and the excess bone and cartilage removed. When necessary a chisel may be used.

The case represented by illustrations was more complicated. This young woman was thrown through the windshield of an automobile resulting in a hump on her nose and other deformities. An attempt was made to repair the damage. When I first saw her her nostrils were very small and there was loss of cartilage about the point of the nose. At operation the hump was removed, the nostrils opened, and the tissues rearranged so as to produce a satisfactory nose.

The hump was removed as heretofore described. Enlarging the nostrils was more difficult. The mucous membrane at the anterior tip of the nostril was cut sagittally, separated well back and the wound sutured in the opposite direction. This gave about four times the capacity to the nostrils but they were not yet large enough. Later an incision was made in the mucous membrane, the skin and mucous membrane were well undercut, a small portion of cartilage removed and sutures placed so as to close the wound with the desired result.

A woman who had a large, deep, prominent and unsightly scar on the bridge of her nose asked to have it removed. To do this there was excised from the bridge of her nose an ellipse of skin which measured five sixteenth inch wide by eleven sixteenth inch long. Undercutting and careful suturing with horsehair gave a perfect result.

A young woman asked for relief from an unusual condition. As a result of muscular action in drawing the nose over to one side when speaking her nose was deviated so that the tip pointed decidedly to the right. An ellipse of skin, its centre at the anterior angle of the nostril where the skin and mucous membrane join was excised and a triangle of cartilage with it large enough, so that the nose was slightly overcorrected. The scar was invisible and the correction complete.

Another condition of which I will speak is probably the most interesting. It is the deformity of the nose which occurs with cleft lip. The cleft side of the nose is flattened, the ala is broadened and the nostril is otherwise out of shape. The present patient had a complete cleft lip and cleft palate which were partially operated upon when he was about a year old and the alveolar process and the lip were united. I operated for the closure of the palate defect and later the nose was operated on and the lip deformity corrected.

The nasal part of the operation was done as follows: Sufficient tissue was removed from the portion of the lip entering the nostrils to bring the ala into proper position, the nostril being well undercut. The edges were sutured with horsehair. A longitudinal incision was made almost the entire length of the columna, curved toward the left at the lip and to the right at the tip. The incision was sutured so as to bring the left half of the nose into normal position. Silkworm and horsehair were used.

CONCLUSIONS

In conclusion, I would repeat only two things: Treat the tissues kindly.

Forget about approximating wound edges but bring the edges of the wounds into exact apposition.

407 PARK BUILDING.

Macrosomia or Congenital Hypertrophy

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Macrosomia, or gigantism, has been defined as "a monstrous largeness of the body." The entire body may be involved, and in this case there is no disturbance of symmetry other than excessive size; the condition may affect one lateral half of the body, when it is usually spoken of as congenital hemihypertrophy; or it may be confined to a single member, or part of a member. Instances of the latter class are naturally more frequent. Whether total or partial, the essential features of the condition are that it is congenital; that all the tissues, skin, subcutaneous fat, muscles, and bone, are involved; and that, in truth, we know nothing about its causation. This does not mean that numerous speculations have not been advanced to account for it, but that none of these are really satisfactory in explaining the overgrowth.

Heredity, maternal impressions and injuries, syphilis, alcoholism, have all been given a place in the etiology, but the connection of any one of them with the hypertrophy has not been satisfactorily established. Polosson believed that macrosomia was due to a disturbance in the lymphatic system which bore a resemblance to elephantiasis. Barwell invoked a failure of development in the muscular tunic of the arteries to explain the overgrowth of the tissues irrigated by them. Trelat and Monod concurred in this view, pointing out the analogy existing between congenital hypertrophy and the nutritive changes seen in arteriovenous aneurysms. Duply advanced the view that the cause was a trophic disturbance of nervous origin. The endocrine system has not been forgotten by those who have sought to explain the occurrence of congenital hypertrophy. It must be said, however, that pathological anatomy lends no support to any of these theories, and that the etiology remains a mystery. It should be noted, however, that vascular nevi are frequently encountered in the affected parts. Macrosomia is stated to be more frequent in boys than in girls, and on the right than on the left side.

The symptomatology consists chiefly in the enlargement of the parts. The discrepancy in size is noticeable at birth, or very soon thereafter, and becomes more striking as age advances. Where both upper and lower limbs are involved the hypertrophy is always more decided in the lower than in the upper limb; and where the whole lower extremity participates in the hypertrophy the leg is apt to be relatively longer than the thigh. In a few cases, the viscera have been found to be enlarged on the affected side as well as the limbs. Reference has already been made to the frequency of vascular nevi in the parts affected. Moreover, the coexistence of other disorders of development, such as syndactylism, has been noted. The skin may be smooth and clean, but not infrequently it is thickened, indurated, and resembles that of elephantiasis. Occasionally there is a greater development of hair over the affected regions. The only other symptoms are such as are a natural result of the greater size and length of the parts. The general health and intelligence are not impaired.

The history of my case is as follows:

Case.—Tillie D., seven years old, was admitted to my service at the Charity Hospital in the early part of June, 1921, on account of a swelling over the lower half of the left tibia, which followed a blow received two months before, which had increased rapidly in size. The father, mother, one sister, and three brothers were living and well. There was no history of tuberculosis, malignancy, hemophilia, or syphilis in the family. The child was born at term, and was normal except for some enlargement of the left leg and thigh. She was breast fed until fifteen months old, and was then gradually put on table food. She had had no infantile diseases, and no sickness except influenza during the epidemic of 1918. As she advanced in age the hypertrophy of the left lower extremity became more and more noticeable, but no treatment was considered until the swelling over the lower half of the left tibia developed after a contusion received on April 10, 1921.

She was well developed and well nourished; skin was smooth, moist, with no scars, and no eruption. Pupils were equal and reacted to light and accommodation; there was slight ptosis of the left lid. Mouth and teeth were in poor condition; tonsils showed mod-

erate hypertrophy. Heart and lungs were normal, and the abdomen negative. The upper limbs were normal. The left lower limb was about five inches longer than the right and about twice as large. The disparity was greater below the knee. Muscles were flabby and the skin rough and coarse. The left labium majorum

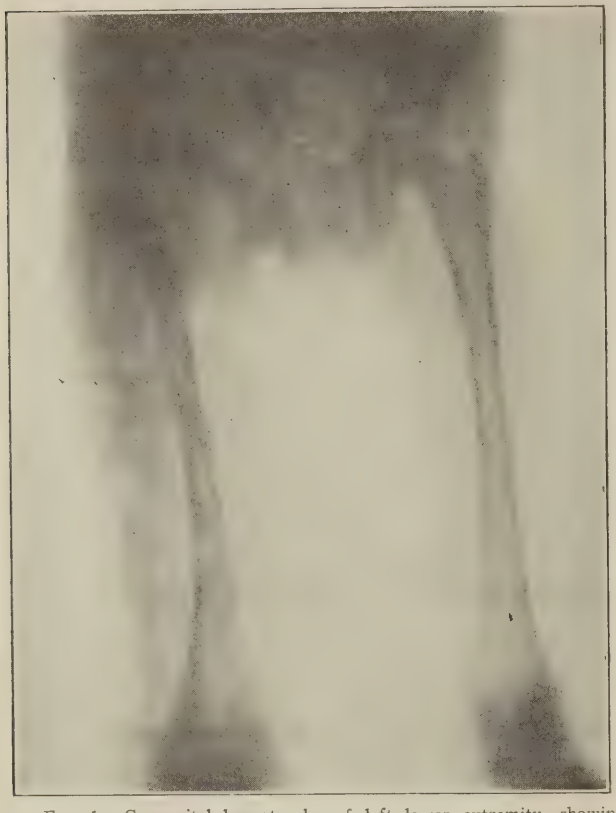

Fig. 1.—Congenital hypertrophy of left lower extremity, showing overgrowth of thigh and presence of a decided coxa valga.

was markedly hypertrophied. There was decided genu valgum, probably compensatory. Over the lower half of the left tibia there was a large soft swelling attached to the bone. This was not painful or tender, but had been increasing rapidly in size. There was no enlargement of the lymphatic glands, and reflexes were normal.

Laboratory findings showed negative Wassermann reaction. Total leucocyte count 8500; erythrocytes 4,750,000; hemoglobin 85 per cent; color index, 92; differential count: small mononuclears 21 per cent; large mononuclears 8 per cent; neutrophiles 68 per cent; eosinophiles, 3 per cent; no pathological changes in red cell; no plasmodia; urine normal.

On June 15th, excellent skiagraphs showed gigantism of the entire skeleton of the left lower extremity. There was evidence of a chronic low grade periostitis of the left tibia. At the hip there was coxa valga. The shadow of a tumor connected with the tibia and invading the soft parts was plainly shown in the lower part of the leg. An exploratory incision was made over the tumor, and a piece sent for examination was reported to be undoubtedly fibrosarcoma.

The interest of this case is enhanced by the presence of decided knock knee and a remarkable degree of coxa valga, but still more by the development in the hypertrophied limb of a rapidly growing fibrosarcoma, following a simple contusion received two months ago. So far as the congenital hypertrophy was concerned no treatment appeared to be indicated, unless the use of a high shoe on the other limb, or possibly, after the age of adolescence, an effort to shorten the limb by a resection of a portion of the femur and the bones of the leg. The sarcoma rendered treatment urgent. The parents finally gave their consent to amputation.

The argument in favor of amputation was based upon the following considerations: Excision of the tumor bearing tissues would necessitate the removal of the greater part of the shaft of the tibia, together with a good deal of the soft tissues. Simple excision carried the threat of early recurrence, and even if this did not occur a secondary operation of bone grafting to restore the tibial shaft would be needed. Even if there were no recurrence, and a secondary grafting operation were successful, the child would be left with a limb five inches longer than its fellow, and would still be a cripple.

A transcondyloid amputation seemed to me a better operation than one through the knee joint as it promised by the removal of the lower epiphysis of the femur to prevent the continued outstripping of the normal limb in length, and would permit the fitting of an artificial limb with the knee joint on the same level as in the sound limb. The operation was accordingly carried out as planned. Healing was delayed by an obstinate watery discharge from the

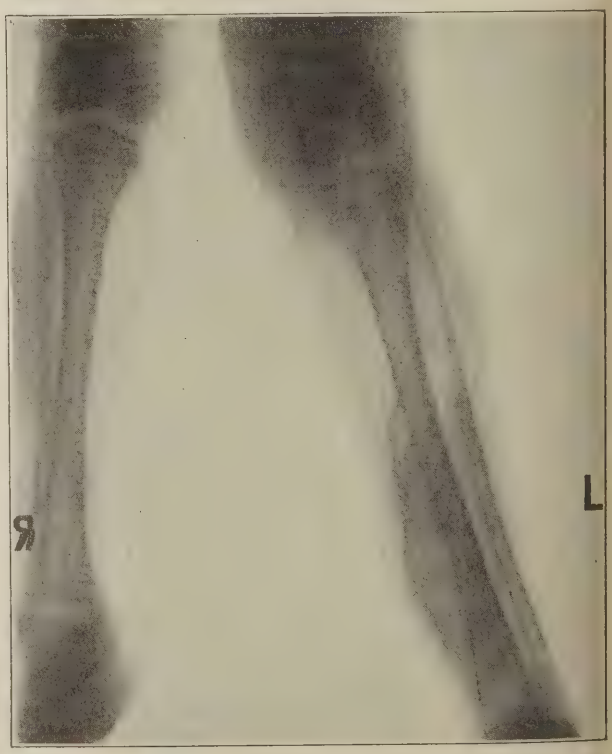

Fig. 2.—Congenital hypertrophy of left lower extremity, showing presence of a fibrosarcoma of left tibia, resulting from a blow two and a half months ago.

stump, but ultimately the amputation wound healed and the patient was discharged.

In spite of many efforts it has been impossible to get any information as to the subsequent history, and we do not know whether metastasis occurred, or whether the child is still living.

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A Contribution to the Efficacy of Ether in the Treatment of Suppurative Otitis Media

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I cannot recall to whom credit is due for suggesting the use of ether in the treatment of purulent otitis media. I know, by personal experience, that it is a remarkable and simple method of curing tympanic suppuration. Its simplicity makes it easy for administration at home. It serves as a differential diagnosis between tympanic and mastoid discharge because in the cases in which it failed to relieve, x ray examination has revealed a chronic mastoiditis. It finds its best use in old cases where the perforation is large enough to allow entrance of the ether into the tympanum. Naturally, when the small size of the perforation precludes the probability of the entrance of ether, we cannot expect results. In acute cases my experience has not been sufficient as yet to merit advocacy of the remedy to shorten the attack. I have found it practically unirritating. Children as well as adults do not often complain after the first administration by the nurse. In the Cornell Clinic I took a series of about seventy-five cases of all kinds of discharging ears—a short résumé of some of the cases follows:

Case I.—J. M., had discharging ears from measles in childhood. On September 30, 1925, her ears began to discharge again. Ether was used twice a day. October 7th found the left ear dry; right ear discharging. October 22nd, both ears were dry. There were small perforations. On November 9th ears were still dry.

Case II.—B. L., had discharging ears for two years. On October 16th employed ether; on the 30th, the discharge had ceased.

Case III.—L. H., left ear discharging for seven months; right ear for two months. After one treatment of ether the discharge stopped. A week later it was still dry.

Case IV.—T. S., had discharge for ten years. October 24th ether was used and twice a day thereafter. Discharge stopped one week later.

Case V.—E. R., had discharging ears for a few days. One application stopped the discharge.

Case VI.—V. W., had discharge from ears for six weeks. It stopped after one month's treatment.

Case VII.—A. B., on September 22nd, had pain for two days; seropurulent discharge followed. On September 29th ether was used, and on October 8th the discharge stopped.

Case VIII.—D. O'C., had had running ears for years. On October 16th ether was administered, and on October 23rd the discharge stopped. On October 30th the ears were still dry.

Case IX.—J. G., had had discharge from his ears off and on for years. On September 23rd ether was used and on September 29th the discharge stopped.

Case X.—M. C., sixteen years old, had had chronic otitis media purulenta for eight years in right ear. On October 28th ether used and the discharge stopped in two weeks.

Case XI.—E. H., twenty-one years old, had discharge from ear for four days. It had discharged off and on for years. On October 27th ether treatment was begun; discharge stopped on November 4th.

Case XII.—T. G., ten months old, had double purulent otitis media for ten days. On October 21st ether was used. Discharge stopped in two days.

Case XIII.—E. Z., aged twenty-five years, discharge from right ear for seven years; thickened membrane with central perforations. On July 29th ether was begun, and on September 1st discharge stopped.

Case XIV.—J. M., aged sixteen years, had had a discharge from his right ear since he was nineteen months old. He had had all kinds of treatment. He has an open ear with polypoid growth from the attic. On July 9th ether treatment was begun. On September 9th there had been no results. X ray showed a sclerotic chronic mastoiditis, and an operation was advised.

Case XV.—E. N., seventeen years old, right ear discharging thirteen years after mastoidectomy; ossicles skeletonized. Used insufflations of boric acid powder for two months. August 4th ether treatment was begun. On September 22nd there was no discharge. On October 6th the ear began to discharge again; ether was resumed and the discharge stopped in a week.

Case XVI.—O. H., nine years old, had had intermittent discharge since he was three years old. Right ear had been discharging now for three weeks. He had had a mastoidectomy done on left side seven years before. July 29th ether treatment was begun. On August 19th the ear was dry. On September 23rd the ear was still dry and hearing almost normal.

Contrary to the suggestion first given by the originator of the treatment who said the ear should be washed only the first time before the treatment was instituted, I have the ears thoroughly cleansed by a boric acid irrigation, partially dried and then with the affected ear uppermost fill the canal with ether. The patient remains in that position until the ether has evaporated. This treatment is given twice a day. Ether boils at 95° so it gives the patient the same sensation as peroxide of hydrogen. It is an easy method for home treatment where syringing at best is not always of one hundred per cent. efficiency.

Naturally one is curious to learn the rationale of its effect. I wrote to Dr. James Ewing for an explanation. He said, "I am quite unable to give you any information regarding the effects of ether on pus. I have never heard of it being used in this relation. I should think it might be a fairly active and effective cleanser; moderately bactericidal, and possibly it might stimulate normal healing."

Dr. Fenton Turck said: "The effect of chloroform, alcohol, ether on cells of the organism was worked out by me in 1903. It indicated that the effect of any

of these anesthetics was to cause an escape of the cell contents which were found in the blood. In prolonged use it seemed to cause the phenomena of shock; in shorter periods of time it seemed to act as a stimulus. The stimulus, therefore, was not the agent but the product of the cells which was released by these agents. The use of ether in the ear would seem to be justified on a biological basis."

In the late war ether was used by the French in gunshot wounds with benefit.

In the *Handbook of Antiseptics* (Dakin and Dunham) Topley is quoted as saying, "that the vapor of ether has a slight but definite bactericidal action. It takes one to forty-eight hours to sterilize pyogenic organisms in agar slants. Ether is irregular in its action. It is clear that the benefit is not a direct disinfection of septic infection.

Waterhouse used ether since 1909 in the peritoneal cavity and in the bladder. In the peritoneal cavity he used three ounces of ether. He speaks very highly of its effect in the *British Medical Journal,* September 6, 1915.

In an examination of smears taken from the ear before and after treatment, the laboratory assistant at Cornell found that the bactericidal count diminished from 70 to 10. At present it is impossible to state what is its real action. Clinically it stops pus formation. Does it do that by its bactericidal action or by its action on the cells (Turck) or as this authority also states, by microscopic cauterization? The fact remains that it is, in the majority of cases, distinctly beneficial. Its effect is sometimes so quick that in one instance where a general practitioner had used it in the ear of a child, the mother came to the clinic alarmed that the discharge had ceased so quickly, fearing that some dangerous sequel might have occurred from the sudden stoppage of the ear discharge. I present the foregoing conclusions from a purely clinical standpoint.

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Ascites*

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Ascites comes from the Greek word meaning bag. Usually the term means an accumulation of serous fluid in the peritoneal sac. Free fluid accumulations consist also of chyle, bile, or blood. There is normally a small amount of fluid in the peritoneal cavity changing constantly by absorption and further transudation. A lack of balance between these two, as imperfect absorption or increased transudation, will lead to excess.

Cabot (1) in analyzing 224 autopsies where ascites was present, found eighty-eight per cent. caused by, first, heart disease; second, kidney disease; third, hepatic cirrhosis; fourth, peritoneal tuberculosis, and fifth, abdominal neoplasms. Other causes for ascites are intestinal obstruction, pernicious anemia, leucemia, visceral syphilis, portal vein obstruction, mesenteric thrombosis, pericardial adhesions, perisplenitis, perihepatitis, ankylostomiasis and echinococcus. The abdominal tumors include ovarian cysts and tumors, uterine fibroids, peritoneal carcinoma, tumors of the kidney (sarcoma, hypernephroma, hydronephrosis) and hepatic carcinoma.

The symptoms in pathological accumulations are painless abdominal distention, sense of weight in the abdomen, dyspnea, anorexia, emaciation, constipation and often anuria. Objectively there is dullness on percussion in the flanks which shifts when the patient alters position. The abdominal skin is smooth and shining, the base of the thorax broadened and the navel obliterated. The fluctuation of fluid may be demonstrated when a hand is placed on one flank and tapping done on the opposite side with the other, an assistant's hand placed firmly and vertically in the midline to cut off the tissue wave. The fluid in passive congestion usually has a specific gravity under 1,020 and contain a few cells, whereas in inflammatory conditions the fluid contains many cells and has a specific gravity of over 1,030. When the fluid arises from carcinoma it may be of a dirty gray color, turbid or sanguineous, with many cells. It is doubtful if x ray examination is of any particular value in the diagnosis of small accumulations, for even moderate amounts of fluid may escape detection.

Diagnosis depends on the history, symptoms, physical examination and withdrawn fluid findings.

Differential diagnosis must be made from ovarian cysts and other abdominal cysts, distention of the bladder, obesity, tympanites, pregnancy, choleperitoneum, hemoperitoneum. The dullness in ovarian cysts is usually unilateral or over the central part of the abdomen with tympanites in the flanks. Cysts of kidneys, pancreas or liver are likely to be unilateral or occupy a part of the abdomen only with tympanites elsewhere. X ray examination is helpful in most of these cases. The catheter rules out bladder distention. With obesity there may be a suggestive succussion wave, but no dullness in the flanks. Tympanites should not be confused with ascites. In pregnancy an x ray examination is conclusive. Hemoperitoneum is usually an acute surgical affair characterized by faintness, pallor, dyspnea, restlessness, tachycardia, vomiting, and colicky pains. It follows ruptured extrauterine pregnancy, trauma to abdominal organs, as gunshot wound, rupture of spleen or liver, or mesenteric vessel, ruptured abdominal aneurysm, or varicose vein, or hemorrhage from carcinoma or sarcoma. Choleperitoneum and chylous ascites may only be diagnosed by puncture and examination of the fluid. The only choleperitoneum I ever saw was last October when I did not drain after a cholecystectomy and the stump of the cystic duct

*From Department of Internal Medicine service of Dr. John W. Shuman, Los Angeles General Hospital. Read at January Staff Meeting.

leaked. Drained on the ninth day the patient made an uneventful recovery. Chylous ascites is a rare condition in which the fluid is milklike. It may occur in tuberculosis, carcinoma of the peritoneum, cardiovascular conditions, rupture or obstruction of the large lymph vessels or receptaculum chyli, cysts and filaria.

The treatment of ascites, at least from the viewpoint of the patient, is the most important consideration. Rest is a great factor, especially in cardiac and renal cases. The restriction of fluids to two hundred c. c. and a maximum of eight hundred c. c. a day is advisable, with the preference given to milk or buttermilk rather than water. The Karrell diet of milk and zweiback four times a day, later adding eggs up to five or six a day, has proved valuable. This can then be increased to a soft diet, either salt free or salt poor. Weighing the patient daily helps to keep up his morale by demonstrating the weight loss, and occasionally it is necessary to interpose a few days of normal diet to relieve the monotony. Catharsis with the hydragogues may be of great value in the cardiac and renal cases. Jalap powder, elaterium and salines are valuable.

Recently we have tried ammonium chloride in large doses in conjunction with novasurol (2), which is a thirty-four per cent. mercurial introduced by Zieler (3) in 1917. (Novasurol is the double salt of sodium mercurichlorphenyl oxyacetate with diethylbarbituric acid—barbital.) This drug may be used intramuscularly or intravenously beginning with a .5 c. c. dose and running up to 2 c. c. Tolerance must first be determined in the smaller doses. Recent papers from the Mayo Clinic (2) report quite striking results with this drug in ascites of hepatic origin, and also in ascites and edema in nephritis. They used from three to seven doses at intervals of three days to a week. Four doses were usually sufficient. In our ward we have not duplicated their success. One case of long standing ascites of renal origin showed a remarkable improvement after the first week. Excretion jumped from three hundred c. c. to over two thousand c. c. in the first two days after novasurol was administered. Within three weeks, however, the ascites, which had diminished rapidly at first, returned. No amount of juggling with ammonium chloride and novasurol had any further effect on the ascites, though a diuresis of short duration followed each injection of the latter. In a second case a stomatitis developed and the patient was salivated after two doses of novasurol. Dr. E. L. Armstrong (4) reported some splendid results on his service though one patient with hydrothorax and ascites absorbed the ascitic fluid but was not relieved permanently of his thoracic transudate.

When the patient suffers from the presence of fluid abdominal paracentesis is indicated. It is done midway between the symphysis and umbilicus after the bladder has been evacuated. Large ascites are best drained slowly because sudden decrease has caused fatal stomach and bowel hemorrhages. We have recently seen a fatal peritonitis four days after abdominal paracentesis. Some patients live years and undergo numerous tappings. Persistent leakage through the puncture is not advisable because of the danger of infection.

Surgical measures have been advocated. The Ech fistula between the portal vein and the inferior vena cava has not been successfully performed on the human. But an anastomosis between a large mesenteric vessel and the iliac vein has been done. Talma (5) and Morison (6) independently in 1889 and 1896 devised the operation of omentopexy. This may be done simply by multiple suture points of the omentum to the parietal peritoneum, or better by drawing the omentum out and inserting it into pockets beneath the abdominal muscles. One statistician (7) finds thirty-three per cent. mortality, seventeen per cent. failure, thirteen per cent. improved, and thirty-seven per cent. cured. It is not a procedure to be recommended early.

The prognosis in ascites is not good. Fluid may remain in the peritoneal sac for years but when pronounced it prognoses death. It should be recognized early, carefully studied, and treated.

CASE REPORTS

Case I.—M. S., male, aged sixty-one, was admitted July 20, 1925, with a history of ascites for five months with two tappings. He had had high blood pressure for several years. On examination the blood pressure was found to be 230/150; urine contained albumin, hyaline and granular casts, phenolsulphonephthalein seven and a half per cent. first hour, and two per cent. second hour. Some improvement resulted from rest, restricted fluids and elaterium. On October 26th novasurol was given in .5 c. c. doses and excretion increased from 300 c. c. to 2,400 c. c. on October 29th. After four doses of novasurol at three day intervals, ascites was greatly reduced. After ten doses the ascites was the same as before treatment and paracentesis required. On December 16th the patient was discharged unimproved.

Case II.—F. A., male, aged thirty-two, was admitted December 1, 1925, with a history of dyspnea on exertion and generalized edema. On examination there was found systolic mitral murmur and slight albuminuria; phenolsulphonephthalein twenty-two per cent. first and forty per cent. second hour; there was edema of extremities. Patient improved rapidly but would not remain at rest. On December 11th a slight respiratory infection developed which was followed by more marked edema and ascites. Elimination, restricted fluids, and digitalis gave slight improvement. On January 1st one c. c. novasurol was administered. Within forty-eight hours salivation developed and marked stomatitis. Ammonium chloride was continued but novasurol was discontinued. Karrell diet now induces vomiting and must be discontinued. No improvement.

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Experimental Investigations Into the Action of Salvarsan

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(Translated by Edward Ahlswede, M.D., Hamburg)

The beginning of this century witnessed a series of important discoveries in research work on syphilis. Schaudinn and Hoffmann, von Wassermann and Ehrlich were the chief investigators. Although salvarsan did not fulfill the expectations of Ehrlich and, as I shall point out later, could not do what was expected of it in the advanced stages of the infection, the superiority of salvarsan over all the other antisyphilitic agents is now generally admitted. Ehrlich discovered a new and powerful weapon whereby every practitioner was enabled to help successfully in the fight against syphilis. It would, however, have been of equal importance in the early days if we had been better informed of the chemical reactions which take place between the spirochetes and salvarsan, and of the reactions which account for the action of the latter, aside from the general scientific interest of this question.

The majority of investigators in the early salvarsan era followed Ehrlich's footsteps, in the hope of finding by purely empirical experimentation, that is, by testing out numerous similiar compounds, one which would possibly prove superior to salvarsan.

As early as 1914 (the beginning of the following investigations dates back to this year), I attempted to explain by microchemical investigation those processes which lead both to a fixation of salvarsan in the body and in the parasite cell, as well as those which finally bring about the devitalization of the spirochetes. This I believed would possibly explain the mechanism of the action of salvarsan and be of some value also in the synthesis of other nonarsenical compounds for the cure of syphilis.

The purpose (1) I had in mind in those days and which I tried to reach by subsequent investigations, was summarized seven years ago, in my paper (2) as follows: "What chemical reaction with what atom groups of salvarsan, and what chemical substances in a particular anatomical site of the cell must take place in order to produce a spirillicide action? This is the main question. If we could definitely decide this question we would be able to determine exactly what chemical properties of a substance are required to develop an action similar to that of salvarsan, for instance.

We would then also be in a position to build up synthetically similar compounds, as we would know exactly what chemical composition guarantees a spirillicide action. In the search for new therapeutic agents we have hitherto worked mostly empirically, following Paul Ehrlich's example, and yet the other way, that is, the microchemical investigation of the action of the individual substances, is scientifically the more exact and promising, though the more tedious."

I did not feel justified in publishing the results of my investigations before all of these questions had been answered experimentally beyond all possibility of doubt. My first reports on the action of salvarsan were therefore made only one and a half years ago at the Munich Dermatological Congress (3). As early as 1916 I was convinced that the Spirocheta pallida was a microorganism poor in oxygen, as I will prove later. The action of salvarsan also seemed to be based on the oxygen abstracting power of arsenic, the effect of which could in all probability be increased by vanadium, an agent which for years has been known to be a still more powerful abstractor of oxygen. Unfortunately, lack of financial support prevented me from further experimentation in this direction. In the meantime, eight years later, vanadium has been tested empirically and its effect on syphilis has been recognized and reported by the American authors, Proescher, Seil and Stillians (4) and the Germans, Winkle (5) and Kroesl (6).

Numerous other problems remained unsolved in those days and even today, a few of which only may be mentioned here. It was of vital importance to know the chemical composition of the spirochete and why salvarsan, for instance, has no influence on spirochetes *in vitro,* yet a marked influence *in vivo.* Nor do we know the primary alteration products of salvarsan *in vivo.* Our knowledge on this point is limited to a few theoretical assumptions. The physical and chemical properties of these alteration products are also unknown. What chemical reaction do they produce in the living spirochete? What chemical reaction between what cellular substances of the Spirocheta pallida, on the one hand, and what salvarsan alteration compounds, on the other, occur in order to make possible a spirillicide action? What accounts for the spirillicide effect after the reaction has taken place? We were also unable to explain the optimum action of salvarsan on spirochetes as compared with the action of the other arsenicals prepared by Ehrlich. Do spirochetes possess an arsenoceptor in the sense of Ehrlich? If so, what substances represent it? Do spirochetes also possess an aminophenoloceptor and by what substances is this represented? Ehrlich assumed that salvarsan is primarily anchored to the parasite by the socalled o-aminophenoloceptor. He was encouraged in this assumption by the fact that arsenophenol is considerably strengthened in its spirocheticidal properties the moment amino groups assume the o-position to the hydroxyl group. In the further course of his investigations Ehrlich concluded that spirochetes possess an arsenoceptor, which, as he proved, is only tuned to arsenic with three and not with five valences.

These questions do not cover all the problems of interest in this connection. We would also want to know why arsenicals with three valences are so very effective and those with five valences so much less effective. Why do arsenobenzoles lose their effect as soon as carboxylization and sulphurization occurs? Why is salvarsan so weak in its antibacterial action? Clinical questions are also of interest. Why does the *sterilisatio magna completa* fail in so

many instances? Which of the numerous arsenicals is the more suitable for this purpose and why? Why does the abortive cure of syphilis succeed only in a certain percentage of cases and why is it not possible after a certain advanced stage of the infection?

These are only a few of the questions which require explanation, and their number could be easily doubled if we were to consider which of the salvarsan compounds is the most suitable and if we were to consider also the mode of action of mercury and bismuth as well as the correlation or possibly the antagonistic action of salvarsan and the metal compounds. It may be agreed that clinical experience alone cannot answer all of these questions satisfactorily. Practical experience in the last fourteen years has in fact proved this. Clinicians cannot answer these questions satisfactorily because they are still obliged to work with *two unknown quantities,* that is the unknown *chemical nature of the Spirocheta pallida* and the likewise unknown *alteration of salvarsan in vivo.* Nor can pharmacological investigation alone aid in the solution of the problem as it usually works with one unknown quantity, namely the chemical constitution of the parasite. It seems that microchemical investigation alone can furnish the final solution of the problem as it enables us to eliminate *both unknown quantities,* as I hope to prove by the following.

To understand the mode of action of salvarsan on the *living* spirochetes and body cells it is necessary to find out first what chemical reaction takes place between salvarsan and the *dead cell.* For didactic reasons these experiments are discussed first.

Salvarsan is fixed to the *dead cell* chiefly by the *nucleoproteids* as well as the *lipoproteids* (lipoid albumin compounds) of the cell protoplasm. This is proved by the observation that after the removal of nucleic acid from the nucleoproteids, for example, salvarsan can no longer be bound by these. The same negative results are obtained if the nuclei of leucocytes, for example, are dissolved with sodium carbonate and the latter are then treated with an ammoniated albargin or silver nitrate solution, to demonstrate the possible binding of salvarsan to the cell.[1]

In these instances certain ions of the alkali and earthy alkali metals play a certain part, as they hasten the precipitation of the salvarsan base. This will be referred to later. While a salvarsan nucleus picture, for instance, is not obtained after removal of the nucleic acid from the nucleoproteids of the leucocytes, the nuclei appearing as clear gaps, microorganisms, even then bind salvarsan. The latter possess, as it were, two "receptors" for salvarsan, in Ehrlich's sense. One is represented by the nucleic acid or nucleoproteids which they contain and the other by their content of lipoproteids. For the same reason salvarsan is fixed by spirochetes, that is, both by the Spirocheta pallida, free of nucleic acid, and the lipoproteid and nucleic acid containing buccal spirochetes.

While Ehrlich assumes that salvarsan is "anchored" to the cell by its individual haptophore groups, microchemical investigation shows that this is not the case. Chemically a *salt* is formed in these cases, namely nucleic acid salvarsan. The powerful reducing capacity of salvarsan is due to its reduxophore groups by which is meant the sum of the —OH and $—NH_2$ groups. If one of these groups is destroyed, as by diazotation of salvarsan, the powerful reducing capacity of salvarsan is lost, which proves that this powerful reducing capacity depends on the integrity of *both* groups. Furthermore, if the two phenylhydroxyl and arseno groups could account for this powerful reducing capacity they would have to develop this high power at this very stage. That is, however, not the case. The fact that a certain reducing power (though this is developed after a considerable lapse of time only) must be conceded to the arseno group is proved by the experiment with diazotated salvarsan and ammoniated silver nitrate solution, which latter also turns brown after twenty-four hours.

As an alteration occurs only in one of the two —OH or NH_2— groups, which also takes place in the event of a substitution) and as this would also occur if salvarsan was bound to the cell by one of these groups, unless a simple additional compound is formed (which is actually the case), and as furthermore the very powerful reducing capacity of salvarsan is still preserved after its fixation to the cell, it follows that neither the OH— nor the $—NH_2$ groups plays any part in the fixation of salvarsan to the cell. Nor does there exist an arsenoceptor in the sense of Ehrlich, by which the arseno groups might act as agents in the chemical reaction between salvarsan and the cell. If this was the case, salvarsan which has been treated with nucleic acid sodium *in vitro* could not react a second time with another nucleic acid molecule of a cell nucleus and furnish a histologic nucleus picture. Macrochemical peculiarities also point in this direction, as one can prove that nucleic acid salvarsan, which has been demonstrated microchemically, can also be obtained macrochemically, the latter still being subject to diazotation, that is still in the possession of an intact amino group. Dehring has also prepared nucleic acid salvarsan macrochemically.

Conditions are entirely different in the living cell. Yeast cells and other microorganisms, as well as spirochetes, show a similar response. Living yeast cells do not bind intact salvarsan, as can be shown by mixing these cells with an intact salvarsan solution and rendering them free of salvarsan in the centrifuge. The living cell, however, immediately binds salvarsan if the latter is oxidized by the passage of an air current.

The different biological response of spirochetes and bacteria to the action of salvarsan must logically be due to the different structure and constitution of these microorganisms. While one can prove that the Spirocheta pallida is poor in oxygen, the bacteria must, generally, be considered to be very rich in oxygen, like the body cells. At a certain concentration in the blood the oxygen poor spirochetes succumb to the oxygen abstracting action of arsenic at a time when

[1] The binding of salvarsan to the dead cell is demonstrated in the following way: Cell smears are fixed in heat and then held for 2-5 minutes in an aqueous solution of 1-1000 neosalvarsan and rinsed in water. A one per cent solution of albargin, to 100c.c. of which three drops of concentrated NH_3 are added, is then poured over the cell smear and the salvarsan picture developed (as in photography) by moving the glass slide to and fro. A leucocyte smear will then show that the nuclei, in particular, stain dark brown, less so the protoplasm. The former have therefore bound the larger amount of salvarsan. The other salvarsan pictures are prepared in a similar way. The neosalvarsan solution in the above is prepared with tap water.

the body cells, and even later the bacteria, have not yet been damaged to any similar extent. Chemically the spirochetes are reduced; biologically, they are suffocated before the body cell is affected by salvarsan, owing to its higher content of oxygen. If this oxygen abstracting capacity of arsenic is further increased by the introduction of powerful reducing groups into the particular arsenicals, compounds are obtained which are therapeutically more effective and therefore develop a more favorable therapeutic index. The latter is comparatively unfavorable with the p-oxy-m-aminophenylarsinoxide, while it is very favorable with salvarsan.

The increase in the spirillicide action which is effected by the additional oxygen abstracting process in the presence of reduxophore groups (as in salvarsan) as well as the decrease in this spirillicide action if the amino group is substituted (the reduxophore groups are then missing) can also be demonstrated experimentally by the animal experiments of Ehrlich and Hata.

Compounds containing arsenic of three valences are good therapeutic agents as they are: 1, basic substances and therefore react powerfully with the acid cell constituents, and 2, more powerful oxygen abstracting agents than the compounds with five valences, which lack this property. In addition to these differences the most important factor of all has to be considered, namely: the difference in the lipoid solubility, for which reason arsenicals with trivalences can be bound by the living cell, while arsenicals with pentavalences cannot. This will again be referred to later. Up to this point the results of my investigations have already been discussed in Munich. While we had already formed a certain general idea of the mode of action of salvarsan numerous points still lacked a satisfactory explanation. It was evident that salvarsan owed its effect neither exclusively to its arsenic content nor exclusively to its reduxophore groups. If this were the case, there would be no reason why sulphurated salvarsan, which also carries the arseno and the same reduxophore groups, should develop a dystherapeutic action similar to the isomere of salvarsan, the 2, 2′— dioxy —4, 4′— diamidarsenobenzol. It was evident that some other till then unknown factor was playing an important part. This factor lies in the chemical structure of the spirochete. Strictly speaking, we know nothing about this structure except that the spirochete is poorer in oxygen than the body cell. Research work arrived at this deadlock several years ago and has remained there. Nor was progress possible as we did not know that class of substances which forms the main structural elements of the spirochete, namely the lipoproteids (lipoid albumin compounds). Progress beyond this stage was possible only after we had succeeded in explaining the gram stain. The latter we know now is due to the content of gram positive lipoproteids in gram positive microorganisms, as was shown in my paper read at Goettingen this year (7).

This paper also shows how my own investigations would have arrived at a deadlock had we not penetrated more deeply into microchemical processes. Those who worked in this direction were reminded of an observation which was made years ago, namely, the identical response of body and spirochete cells to the Giemsa stain on the one hand, and of nucleic acid yeast cells and yeast cells artificially freed of nucleic acid, on the other.

Everything pointed to a lipoid content of the Spirocheta pallida and it was shown in a previous publication (8) that the pallida is actually built up of a gram negative lipoproteid. At this time it was also observed that if the nucleic acid is withdrawn from yeast cells and their lipoproteids remain, the stains of the fuchsin group, in particular victoria blue, prove to be a lipoid stain par excellence. The Spirocheta pallida can therefore be demonstrated particularly well with victoria blue, as Muehlpfordt also discovered, empirically, independently of my investigations. From this knowledge of the lipoproteid nature of the Spirocheta pallida it was evident that the staining of the latter could be considerably improved upon by staining not only one of the constituents of the spirocheta lipoproteids (the lipoid acid) with the basic victoria blue, but also the other component of the lipoproteid, the basic albumin, with an acid blue stain, by which a summation of the staining effect results, especially if alkali blue, a slightly lipoid-soluble blue stain is chosen. These conclusions led to my development of a very bright stain for spirochetes, which I have already described (9). It was furthermore necessary, in order to complete our knowledge of the action of salvarsan, to investigate the chemical composition of the salvarsan alteration products after oxidation has taken place. As has been mentioned, air was led for a certain length of time through an alkaline solution of old salvarsan for this purpose, and the precipitate examined. By its reactions this proved to consist of the free salvarsan base. The solubility in alkalies, the insolubility in water and the reactions to a lecithin ether solution, to alcohol, benzol and ether already pointed to this. Independently of my investigations, Kritschewsky has recently demonstrated, as I learn from the new manual of Kolle and Zieler, that the sediment which forms in salvarsan solutions consists of the salvarsan base which is split off by hydrolysis. Furthermore, if we consider that the living yeast cell binds the maximum of salvarsan *at the very moment* the salvarsan solution begins to release the base, the connections are explained.

It was evident that some relation must exist between the lipoproteid content of yeast and the developing water insolubility of the salvarsan base. It was probable also that an increased lipoproteid solubility of the salvarsan base would develop. (This actually occurs.) These conclusions led me to search for the underlying causal connections. If the above assumption is correct it follows that living yeast cells must chemically bind a freshly prepared salvarsan base (prepared by precipitating with NaOH from old salvarsan and then rinsing). This is actually the case, as can be demonstrated by shaking up living yeast cells with a freshly precipitated and rinsed salvarsan base. This is allowed to stand for a few hours, then rinsed again and treated with an ammoniated silver nitrate solution.

Only one question remained unsolved now:

Does, in the event of such a selective storage of the salvarsan base by the lipoproteids of yeast, a formation of salt take place, or is the salvarsan base

only bound by absorption? This question could, of course, not be answered directly with regard to salvarsan. However, the above finding led me to investigate the action of the violet black victoria blue base (which is practically water insoluble though more markedly lipoproteid soluble) on living yeast cells, anthrax bacilli and spirochetes as I have explained in my paper, A Note on the Demonstration of Bacterial Nuclei and the Chemistry of Disinfection read before the Berlin Microbiological Society, November, 1924. If the victoria blue base is applied to these microorganisms they store the base *selectively* and stain *blue* in the color of the victoria blue salts and not red, provided a simple solution of the victoria blue base took place. I might add that the above microorganisms respond in the same way to the absolutely colorless new fuchsin base. They stain red with the color of the salts of this base, which proves that the disinfection of the cells in these cases, chemically represents a salt formation. One could also demonstrate this by not applying the dye bases but their salts and by finding chloride in the centrifugated fluid. This would also point to a salt formation, provided the yeast cells treated with a fuchsin solution contain only lipoproteids and have previously been freed of their nucleic acid content. It follows, therefore, that the selective storage of the salvarsan base by the lipoproteids of yeast cells must take place in the sense of a salt formation, as salvarsan would otherwise be eliminable through rinsing as is the case when living yeast cells are treated in the same way with intact salvarsan.

I therefore conclude that if the microchemical findings are correct and if the Spirocheta pallida and the other spirochetes are built up of a lipoproteid they must be able to bind both the salvarsan base and the victoria blue base selectively and would consequently have to stain *blue* with the victoria blue base. This is actually the case. Both the buccal spirochetes and the recurrens spirochetes (in the blood of mice afflicted with recurrent fever) stain blue in the hanging drop after some time with the victoria blue base. This can also be shown with the pallida, though not as easily because of its more delicate structure. These experiments, however, do not enable us to demonstrate the binding of salvarsan to spirochetes, as sufficient quantities of parasites for exposure to the action of salvarsan are not available and one cannot rinse them and then treat them with a silver nitrate solution. However, one can demonstrate this *in vivo* which is still more convincing. In this way we can, as it were, confirm our micro*chemical and analytical findings macrochemically.*

To return to our experiments with the alteration products of salvarsan and living yeast *in vitro.*

Living yeast cells bind little unaltered salvarsan. If the contrary were the case, a quantity of yeast which has been treated with an unaltered alkaline solution of one one thousandth old salvarsan, when centrifugated, rinsed and freed of its salvarsan would have to turn brown black following an aftertreatment with an ammoniated silver nitrate solution. This is not the case. Macroscopically the yeast only appears light brown. Microscopically one recognizes all living yeast cells as absolutely colorless while dead specimens are stained deep brown.

A method for distinguishing living and dead germs is based on this observation (10). The further salvarsan is oxidized through passage of an air current, the darker (black) the corresponding yeast tubes will appear if treated later with an ammoniated silver nitrate solution. The moment a deposit forms in the salvarsan solution the cells stain deep black, that is, they have bound the maximum quantity of salvarsan. Vice versa, one can prove that the cells have bound a maximum of salvarsan at this moment, as the salvarsan solution when removed (by centrifuge) after the yeast cells have exerted their action, *does not stain so intensely brown.* In fact, the intensity of the staining decreases with the duration of the action of the yeast cells on the salvarsan solution. One can also prove that the deposit which is formed consists of the salvarsan base, as the reaction to water, alcohol, ether, benzol and lecithin ether readily shows. If neosalvarsan in a concentration of 1:1000 is chosen for the same experiment only very little of it is bound to the cells after oxidation, in contradistinction to old salvarsan. To bind the same quantity of neosalvarsan as of old salvarsan to the cell, ten times the concentration of the former is required. Silver salvarsan acts in the same way as old salvarsan.

These tests show that if salvarsan is oxidized, the formation of p-oxy-m-aminophenylarsinoxide does not occur immediately, as has generally been assumed. The salvarsan base is precipitated first, the oxide mentioned being formed later, as one can judge by the dirty brownish discoloration of the solutions. The fact that this progressive oxidation occurs comparatively slowly is also proved by the prolonged preservation of the dirty yellowish sediment during the subsequent oxidation process. This sediment would have to disappear more quickly if the change into the p-oxy-m-aminophenylarsinoxide took place quickly, the latter being readily soluble in water.

What happens *in vivo?* The following are the possible alteration products of salvarsan:

One can rule out the p-oxy-m-aminophenylarsinacid as the possible effective alteration product of salvarsan *in vivo* for the following reasons: it is rendered practically lipoid insoluble, through arsanilization, as can be shown by letting its aqueous solution or a solution of its sodium salt act on lecithin ether and then subjecting it to an ammoniated silver nitrate solution. We have, furthermore, demonstrated that spirochetes are only able to bind selectively lipoproteid soluble[2] more markedly than water soluble substances. Such a binding would therefore be impossible owing to the physical properties of the arsin acid. The inefficiency of the latter against parasites *in vitro* has also long been known. If salvarsan, therefore, acted *in vivo* only after its change into the arsin acid, it could not produce clinical results for the reasons given.

(*To be concluded*)

[2]Lipoproteid solubility and lipoid solubility are not identical. The victoria blue base, for example, is bound selectively by lipoproteids and forms the corresponding dye salts with these, while cholesterin, on the other hand, cannot bind the victoria blue base selectively nor does it form a dye salt. This is proved by the fact that cholesterin-ether dissolves the dye base in the same quantity with a red color as does ordinary ether. Nor is a salt formation probable as cholesterin is an alcohol. This is also the reason why red blood corpuscles do not stain blue when fresh blood is mixed with the victoria blue base, while the lipoproteids alone turn blue. This experiment therefore enables the staining only of the parasites and of the lipoid containing protoplasm of the white blood corpuscles and not of the nuclei.

Practical Therapeutics

MERCURY IN THE TREATMENT OF SYPHILIS

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According to Stokes (1), mercury was perhaps first employed in the treatment of syphilis during the latter part of the fourteenth century and early in the fifteenth century. Garrison (2) states that in the twelfth century, mercury salve was applied as a treatment for various skin diseases, and special mention is made of the efficacious action of mercury salve in the relief of certain classes of skin lesions. This might suggest that the certain kind of skin lesions referred to, that is the ones yielding so well to the influence of the mercury salve, were really luetic manifestations. Even the Arab physician, Astruc, knew of the value of mercury ointment and accordingly made use of it in the treatment of certain skin conditions. It is significant that since as early as the twelfth century mercury in some form has been used in medicine.

In this paper we are only concerned with its therapeutic application in syphilis. If we accept either the theory that syphilis first appeared in Europe following the return of the Columbian expedition from Haiti in 1493, or the notion that it became pandemic during the early part of the fifteenth century and that it existed perhaps centuries before, appearing here and there endemically, then we must accept the fact that even in those early times mercury was the chief therapeutic agent for the treatment of those skin diseases, which would probably be called syphilis today.

Mercury was first applied as a salve or ointment (inunction cure), then orally, either alone, in the form of a salt of mercury, or in combination with other chemicals (mixed treatment), and according to Shoemaker (3), in 1865 its first administration in the form of the sublimate salt by hypodermic injection was made by George Lewin at the Royal Charity Hospital in Berlin. With mercury, as with other drugs, harmful effects have been reported from time to time, and some salts or compounds of mercury have fallen entirely into disrepute because of untoward reactions following their use. Following the discovery of salvarsan by Ehrlich (4) in 1910, there existed for a time a tendency to discard mercury in favor of this newly discovered drug, but it was soon shown that salvarsan alone could not accomplish everything, and that the use of mercury, the old standby, in conjunction with salvarsan gave better results. Mercury and salvarsan together, it has been shown, accomplish more in syphilis than either of the two alone, and rarely does a syphilographer today depend entirely on only one of the two drugs.

Of late another drug, bismuth, in various forms, either the soluble salts or the insoluble salts, has come into use as an antiluetic remedy, but as yet, not a great deal can be said concerning the value of the drug. Kolle (5), working with rabbit syphilis, has shown that the soluble salts are not very effective spirocheticides but that the insoluble salts produce some beneficial action. He did not find that it equaled either salvarsan or mercury in effectiveness. It is, perhaps, more useful if the spirochete has become fast to either the action of salvarsan or mercury, or when a patient is hypersensitive to the effects of one or the other of these two drugs. In the opinion of the writer it ranks third in the antiluetic drug armamentarium. Ballenger and Elder (6) assert they have obtained excellent results with a suspension of bismuth salicylate in oil. According to them it was most valuable in cases where the spirochete was "fast" either to salvarsan or mercury. They used it together with salvarsan and mercury and reported good results in a number of cases. It remains to be seen, however, if the three in conjunction, namely, salvarsan, mercury and bismuth, will accomplish any more than the two former alone.

In my opinion, salvarsan and mercury are absolutely essential. The selection of the safest and most dependable forms of these two drugs is of great importance, as is the mode of their administration. After careful observation for almost two years, I have concluded that the best results follow the administration of silver-salvarsan, as the arsenical part of the treatment, and mercurosal, an organic compound of mercury, as the mercury end of the treatment. The two have been administered intravenously to a number of patients.

According to Rowe (7) mercurosal, a water soluble compound of mercury, conforms to the following chemical formula: Disodiumhydroxymercurisalicylacetate. The drug contains about forty-four per cent. of the metal and is relatively less toxic, in spite of its higher mercury content, than the salts of mercury more commonly employed. The following table will serve as a comparison with other sales of mercury:

	Average Dose		*Mercury Per Cent*	*Amount of Mercury Per Dose in Grains*
	Metric	*Grains*		
Mercurosal.....	0.1	1½	44% approx.	.66
Mercury oxycyanide..	.008	⅛	82.5	.103
Mercury bichloride...	.032	½	74.	.37
Mercury salicylate....	.065	1	59.5	.595
Mercury succinimide.	.010	⅙	50.5	.084
Mercury iodide.....	.010	⅙	44.	.073
Mercury protoiodide..	.010	⅙	61.1	.102
Mercury benzoate....	.008	⅛	45.25	.0566
Mercury cyanide.....	.010	⅙	79.4	.132

It is obvious from this table that, based on actual mercury content, more mercury per dose can be safely delivered into the blood stream with mercurosal than with any of the other salts. It will also be seen that mercurosal has a higher mercury content per average dose than even the insoluble salts of mercury which, of course, cannot be given intravenously. In the article by Rowe referred to above, after careful animal experiments with various salts of mercury and mercurosal, he concludes that mercurosal is only one fifth as toxic, even when equivalent mercury content is considered, as such salts as the bichloride, iodide, salicylate or succinimide.

Opinions differ as to the relative values of soluble and insoluble salts of mercury. The suggestion is

sometimes offered that insoluble salts, because of their slow absorption from the tissues, are more valuable because a constant mercury effect upon the spirochete is thus produced, whereas, with soluble salts the mercury effect is only for such time as the mercury remains in the blood circulation. The clinical results obtained by the writer using mercurosal, a soluble salt of mercury, did not confirm such suggestions—the contrary was apparently true. A full mercury effect was produced with mercurosal and this could be maintained by successive doses of the drug given at regular intervals. With insoluble salts care must be exercised because of the cumulative action, due to the fact that the rate of absorption from the tissues cannot be controlled. With mercurosal a definite dose can be given and the dose repeated without fear of cumulative action because the drug is eliminated at a definite rate. The occurrence of a condition such as a fastness of the spirochete to mercury may be due to the fact that the full mercury effect is never fully obtained from insoluble salts of mercury, the action of mercury in this form not being sufficiently spirocheticidal. With an adequate dose of mercurosal a spirocheticidal effect is produced, as evidenced both by a rapid disappearance of the lesions and a reduction in the blood Wassermann. In my clinical work, doses of two decigrams of mercurosal, two ampoules at a time, have been administered without producing untoward reactions. When slight mercurialism did occur, the symptoms were readily controlled, either by suspending treatment for a time or by applying the usual remedial measures. As much as two tenths or two ampoules three times a week, a total of six tenths of mercurosal, have been administered to get a full mercury effect rapidly and no untoward reactions occurred. I do not think it advisable to give so much of the drug to begin with, unless the patient's tolerance has been previously determined. In the cases treated with these large doses, smaller doses, gradually increased, have indicated the patient's tolerance. It might be well to point out that it is extremely important to make sure that the patient's power to eliminate properly the drug is not hampered by a kidney condition or other cause. In an article by Gruhzit (8) it has been shown, as a result of careful animal experimental work, that mercurosal in doses of three tenths in a week is spirocheticidal and this dose may be continued for a long time without injury to the patient. The work of Gruhzit has been confirmed clinically by Belding and Holmes (9) in their report of the effects of mercurosal upon the Wassermann reactions of patients treated by them. The writer's results are quite in agreement with the findings of Belding and Holmes and in accord with these two investigators that intensive treatment should be the rule and not the exception. In my clinical work, both silver salvarsan and mercurosal were used in the treatment of the cases. No untoward or harmful effects resulted from their use, either in separate courses or by alternating the two; for example, one day silver salvarsan, the next day mercurosal. Improvement of the lesions was invariably prompt, and in most cases the blood Wassermann was decreased after a few courses or soon became negative. Of course, the writer does not wish to give the impression that every case treated became negative or that mercurosal and silver salvarsan reduced all of the socalled Wassermann fast cases. However, the point that will interest the clinician is the fact that both silver salvarsan and mercurosal are dependable and potent drugs.

In the treatment of the series of cases upon which this article is based, comprising primary, secondary and tertiary cases of syphilis, the technique has been as follows: After the diagnosis had been made, the patient's urine was carefully examined. This was done in order to determine if a kidney condition existed that might contraindicate the use of either salvarsan or mercurosal. If the urine analysis revealed no evidence of serious kidney pathology, the treatment was begun.

TECHNIC

In cases of primary or secondary syphilis four doses of silver-salvarsan, three tenths on successive days (Pollitzer (10)) were administered intravenously. After an interval of two days, eight or ten doses of mercurosal one tenth were administered, one ampoule either every third or fifth day (using the same vein through which the silver-salvarsan was given). If the patient happened to be a child or an undersized adult, the dose was made proportionately less. Usually half an ampoule of mercurosal was well borne. If the patient's tolerance was good, the next dose given was a full ampoule or one decigram. After two days more, silver-salvarsan three tenths was again given but now only twice a week until six doses had been administered. This was followed again by mercurosal one tenth, one ampoule, every five days until eight doses had been administered. This usually constituted the first course of treatment. The patient was then permitted to a rest period of four weeks in the early cases. After the rest period, before beginning the second course of treatment, a blood Wassermann was made. The second course of treatment consisted of weekly doses of silver-salvarsan three tenths, and between the weekly doses of the silver salvarsan, one ampoule or one tenth of mercurosal, usually eight to ten doses of each. After this course the regular rest period of a month to six weeks was again allowed the patient, and before beginning a new course of treatment, a blood Wassermann was again made. The treatment as above outlined, namely six to eight doses of silver-salvarsan three tenths and mercurosal one tenth (one ampoule), one of each was again repeated as outlined above, and this intensive treatment continued for the first year regardless of the Wassermann being negative or not. After the Wassermanns had remained negative, an examination of the spinal fluid was recommended. If the findings proved negative, the patient was discharged with of course the warning, to return from time to time for a blood examination. In fact, the patient was advised to have a Wassermann made about every four or six months for the next two or three years.

In the tertiary cases the same procedure was followed with regard to the routine uranalysis before beginning treatment. The treatment consisted of a course of silver salvarsan three tenths once a week for from six to eight doses, and mercurosal one tenth (one ampoule) once a week between the doses of silver-salvarsan, until ten or twelve doses had been

administered. The regular rest periods of six weeks were allowed following the courses of treatment and the Wassermanns were made at regular intervals before beginning a new course of treatment.

For a year the urines of all patients treated were carefully watched, and not in one instance did the treatment produce or give rise to any kidney symptoms. Frequently all of the medication was delivered through the same vein and no injury to the vessel resulted. Patients who had received medication intramuscularly with insoluble salts of mercury before, very often, after receiving intravenous injections of silver-salvarsan and mercurosal, flatly refused to be treated any other way thereafter. It was easier to get patients to return regularly for treatment when the medication was administered intravenously because they never suffered from any pain or swelling, the discomfiture frequently caused when intramuscular medication is used.

I wish to emphasize the fact that mercurosal, in my clinical experience with it, did not produce injury to the veins.

I have selected a few cases from quite a large series treated in the manner outlined above. The case histories and treatment were as follows:

Case I.—A. L., male, U. S., aged forty-five. Chancre present eight or nine days. Darkfield examination from lesion. Spirochete present. Wassermann examination December 16, 1924, two antigens, four plus. Treatment: silver-salvarsan three tenths administered intravenously on the following dates: December 22nd, 23rd, 24th, 26th, 29th, January 2, 1925. Mercurosal, one ampoule, one tenth intravenously administerd on the following dates: January 5th, 9th, 14th, 19th, 24th, 29th, February 3rd, 8th, 15th, 20th. One month rest period allowed patient. Wassermann February 22, 1925, two antigens, both negative. Treatment resumed—silver-salvarsan three tenths administered on the following dates: March 23rd, 27th, 30th, April 3rd. Mercurosal, one ampoule one tenth, ten doses during period from April 10th to May 10th. Rest period then allowed patient—six weeks. Wassermann June 24th, two antigens, both negative. Patient now receiving another course of treatment.

Case II.—S. A., female, aged nineteen. Chancre of tonsil, mucous patches, adenopathy. Wassermann November 11th, four plus. Treatment: silver-salvarsan November 16th, 18th, 20th, 23rd, 25th. Mercury salicylate, four intramuscular injections. Patient refused to have salicylate of mercury injections on account of pain. Treatment resumed—silver-salvarsan three tenths intravenously January 11th, 14th, 18th, 21st, followed by mercurosal, one ampoule one tenth intravenously January 24th, 29th, February 5th, 9th, 13th, 19th, 24th. Wassermann February 26th, two antigens, negative. Treatment continued. Silver-salvarsan March 7th, 14th, 21st, 28th. Mercurosal weekly April 1st, 8th, 15th, 22nd, 29th, May 13th. Wassermann May 27th, two antigens, negative. Silver-salvarsan June 13th, 20th, 27th, July 11th. Mercurosal August 12th, 19th, 27th, September 3rd, 10th, 17th. Silver-salvarsan January 12th, 19th, 26th, February 9th. Then mercurosal weekly, ten doses from February 2nd to April 21st. Wassermann, two antigens, July 1st, negative.

Case III.—R. A., female, aged thirty. Infected 1920—tertiary syphilis. Symptoms—small gummata of face and arms. Patient had received previous treatment of fourteen salvarsan and twelve mercury salicylate injections before coming under my care. Last Wassermann reported to be two plus. Wassermann May 22, 1923, two antigens, both four plus. Treatment: silver-salvarsan, three tenths May 28th, June 1st, 4th, 8th, 11th, 15th. Mercurosal, one ampoule one tenth, at five day intervals, until eight doses were administered, from June 19th to July 24th. Rest period allowed until October 1st. Wassermann then two antigens, both two plus. Treatment resumed—silver-salvarsan and mercurosal intravenously, given alternately—October 6th, 9th, 13th, 17th, 21st, 24th, 28th, November 1st, 4th, 7th, 11th. Mercurosal was now given alone on the following dates: November 14th, 19th, 24th, 29th, December 4th, 9th, 15th, 20th. Rest period to January 15, 1925. Wassermann then, two antigens, both negative. Treatment resumed—silver-salvarsan and mercurosal administered alternately during February and March—February 9th, 13th, 16th, 20th, 23rd, 27th, March 2nd, 6th. Then mercurosal as follows: March 13th, 20th, 27th, April 3rd. Rest period to July 14, 1925. Wassermann made, two antigens, both negative.

SUMMARY

1. It would appear from the literature that mercury was as old in the treatment of syphilis as the modern recognition of the disease itself.

2. That salvarsan and mercury together give the best results, especially when these drugs are administered intravenously.

3. That bismuth is of distinct value in the treatment of syphilis but that it has not the spirocheticidal action of either mercury or salvarsan and therefore further observation and study of its action will be necessary before any definite conclusions can be drawn.

4. That silver-salvarsan and mercurosal give excellent results when both are administered intravenously and when intensive treatment with both is made the rule.

5. That mercurosal has a higher mercury content than the usual salts of mercury employed, and that its toxicity is lower.

6. If proper attention to the patient's elimination is given and the patient's tolerance to the drug is carefully observed, as high as two tenths (two ampoules) of mercurosal at one time may be given without danger to the patient.

7. That mercurosal does not usually produce a severe mercurialism or stomatitis when given ever over a long period of time, and that when such symptoms do appear, they are amenable to simple treatment.

8. That patients, having once received mercurosal by the vein route, invariably rebel against the use of the insoluble salts of mercury by intramuscular injection.

9. That no injury to the vein results from the use of mercurosal and that no kidney injury is produced from its use alone or in conjunction with silver salvarsan.

The references will be included in the author's reprints.

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The Physician and the Patient of the Future

Presidential Address

WENDELL C. PHILLIPS, M.D.

New York

Who can visualize or define the physician and the patient of the future? Human progress has always been associated with epoch making discoveries, and medicine, with other sciences, has blazed an enviable trail along the pathway of the ages. The marvelous achievements of the men of medicine of today are largely the outgrowth and fruition of similar achievements of the founders of our art. The history of no other science contains brighter pages than those illumined by the scientific conquests of the great men of medicine. The new developments in medical science have created the necessity for changes in modes, methods and economies so far reaching as to affect all phases of national, family and individual life. The physician both of the present and of the future must be an integral part of our civilization and much concerned with its changes.

THE HERITAGE OF THE FUTURE PHYSICIAN

Human sympathy evolved a desire in men to relieve sickness and sorrow. Sixty centuries have elapsed since Egyptian medicine first made its imprint on humanity. The Greeks gave us a new conception of medicine as an art. True, the early leaders in medicine were not only physicians but also priests and philosophers with little knowledge of anatomy, physiology or chemistry; but they implanted into the basic structures of our science the spirit of the healer.

Born four hundred years before Christ, surrounded by all that Greek culture and education meant in that day, Hippocrates was justly acclaimed the ideal physician, the great teacher and the founder of modern medicine. He not only taught his pupils what he knew of medicine, but he ever insisted that they should enter into professional life with high ethical ideals, which time has never effaced. To him we owe the formulation of the renowned hippocratic oath. By that vow the physician pledged himself to his teachers, and to disseminate to those who followed him the knowledge that he acquired. He pledged himself to follow that system of treatment which, according to his ability and judgment, would be for the benefit of his patients, and to abstain from whatever was deleterious and mischievous. He foreswore all harmful methods and resolved himself to practise for the benefit of the sick. "Whatever, in connection with my professional practice, or not in connection with it, I see or hear, in the life of men, which ought not to be spoken of abroad," he said, "I will not divulge, as reckoning that all such should be kept secret."

In those earlier periods, nothing was known of pathology and there was no scientific basis on which might be based a reasonable understanding of the causes of disease; nor had the physician or the patient the benefits to be derived from hospital or laboratory. But as time went on diphtheria, plague, tuberculosis, gynecological diseases, obstetrics and affections of the eye, ear, nose and throat and many other diseases were fairly well defined.

The thirteenth century marked the foundation and rise of the universities and the gradual development of methodical medical studies. Dissection became more common; hence, the knowledge of anatomy and surgery progressed. Conscientious surgeons undertook serious operations without fear of criticism.

At this period few of the world's inhabitants reached adult life without an attack of smallpox. About 1796, Edward Jenner, practitioner of Gloucestershire, in England, boldly transferred cowpox infection from the hand of a young milkmaid into the arm of a young lad named Phipps, and immediately established the fact that immunity could be produced As the result of vaccination, smallpox, the dread blemisher of human beauty and destroyer of human life, has become a thing of the past, except with people who foolishly neglect to avail themselves of the protection thus provided. But for Jenner's discovery, the faces of at least fifty per cent. of this audience would be marred by pockmarks. The decimation of cities and communities from smallpox had continued throughout the centuries. But for this discovery, the continued high death rate from smallpox in foreign countries would have made it impossible for the United States in 1926 to have anything

like a population of one hundred and ten million. In the light of this great discovery and boon to humanity, the proofs of which are positive and unassailable, is it not strange that prejudiced, benighted individuals and believers in cults like the antivivisectionists, the antivaccinationists, the chiropractors and the Christian Scientists, should presume to question the effectiveness of vaccination and unhumanly attempt by precept, by example and by propaganda to prevent its employment? Unfortunately, during the last few years in various parts of our country these forces for evil have succeeded in creating prejudice. Neglect of protective vaccination against smallpox has resulted in more or less alarming outbreaks of the disease. The state of Florida has just furnished an example of this kind. Wherever states have been lax regarding the vaccination of school children, smallpox has spread, and yet this disease is an example of contagious disease which we know positively can be prevented.

Louis Pasteur, father of the conception that bacteria (germs) are the direct cause of many diseases, gave to the world the key to the causes of putrid and suppurative diseases. Then came a positive demonstration of a specific germ—Robert Koch's discovery of the bacillus of tuberculosis.

Surgery adopted the principles first of antisepsis and later of asepsis. Few surgeons had ventured previously to perform major operations on the vital portions of the body, on account of the frightful mortality which resulted from suppuration. Joseph Lister, in 1878, showed how bacterial infection of wounds may be prevented by applying the principles of antisepsis in surgical operations. This momentous discovery revolutionized surgery and greatly lowered the mortality from surgical operations. Today surgeons, applying aseptic principles, do not hesitate to operate on any portion of the body, even the human heart.

In the fifty years since the discoveries that have just been mentioned, chemistry in medicine has made rapid strides, particularly in its relations to studies in physiology and metabolism. Chemical estimation of blood urea, proteins and gastrointestinal contents and laboratory studies in cardiorenal and blood efficiency enable the physician to estimate the conditions of important organs of the body.

Meanwhile, physics, pathology, bacteriology, sanitation and preventive medicine have been developed to a high degree. The discovery of antitoxin for diphtheria has proved a boon to the child. The various animal carriers of disease have been determined and classified.

The work of Gorgas in making possible the building of the Panama Canal by the application of our knowledge of insect transmission of yellow fever and malaria, and the employment of antityphoid and paratyphoid vaccine, together with sanitation of water and food supplies, have practically annihilated these diseases. The future may bring about the complete eradication of diphtheria, scarlet fever, whooping cough, and possibly all the exanthems; while yellow fever, typhus fever and all plagues are falling before the gigantic march of preventive medicine, based on bacteriological discoveries.

This has been the contribution of the physician to the march of human progress. Truly, neither the physician of the present nor the physician of the future need ever blush when contemplating his professional heritage.

CHANGES IN PRESENTDAY MEDICAL PRACTICE

We build on the experience of the past. The rapid strides in medical discoveries of the last two generations, together with the more practical employment of sanitation and preventive medicine, have already effected great changes in the actual duties of the practising physician. The daily round of our immediate predecessors was made up largely of the treatment of infectious and contagious diseases. The daybook of the family physician usually recorded visits to families for the treatment of measles, scarlet fever, diphtheria, typhoid fever or malaria only. He was educated to treat disease. He knew little of preventive medicine, sanitation or hygiene, nor did his medical education provide such knowledge. Older living practitioners know of the changes which mark the new era only by keeping abreast of the times.

National, state and municipal departments of health have gradually become powerful and controlling factors in preventive medicine, sanitation and hygiene. Health and welfare organizations, both national and local, have also invaded the field of preventive medicine. Great industrial organizations have introduced various health measures, believing it to be for their own best interests from an economical viewpoint, as well as for the benefit of the hundreds of thousands of employees. Pay clinics and group practice have made some slight imprint on the modes of practice of today. Furthermore, the publicity work of all these agencies, together with that of our own association, has gradually created a demand from the public for more information regarding personal health. The outcome of these measures has led to confusion regarding not only the present but also the future of medical practice. But the confusion of the present need never become chaos in the future, provided the medical profession prepares to meet the demands of the patients of the future.

HEALTH EDUCATION FROM THE VIEWPOINT OF THE PUBLIC

The new era in medicine which the physician of the future must be prepared to enter must also rest on the foundation of a wide and comprehensive plan of personal and public health education. Professional policies, narrowly conceived, can never successfully oppose the rightful interest in the public. The failure properly to educate the public regarding the achievements of medicine and its importance in the preservation of life and the prevention of sickness may be considered as such a policy.

The editors of great daily newspapers and magazines, the newspaper syndicates, and university and public school teachers are calling on the medical profession as never before to enter this field. They properly contend that the educated physician must remain the source of personal and public health education. The *Saturday Evening Post* recently said that the "science of medicine, as far as laymen are concerned, is the most tonguetied of all the learned professions." It called attention to the difficulties surrounding the scientific vocabulary of medicine as a means of teaching the public, and the shrinking atti-

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tude of the medical profession toward the lay press. Then followed the statement:

"The enlightened physician has a great body of news of the highest importance to communicate to nonmedical readers. When the medical profession becomes more fully awake to its responsibilities in this field, it is to be hoped that it will perceive the gravity and importance of its problem and attack it in force over a nationwide front. Some national body, such as the American Medical Association, which has made such a good start along these lines, ought to take up the matter in a big way and work out a comprehensive program which would unify the efforts of the agencies already in the field, and cover the lay press of the whole country."

These friendly criticisms are perhaps well deserved. Our answer is that organized medicine has already entered this field. Considerable progress has been made in overcoming the reticence of medical men when called on to prepare health talks for audiences or the radio, or to write articles for lay publication. The prejudice that has existed against these measures is being dispelled. If the radio had been available during the ministry of the Great Physician, he would have made it hum and thrill while it adroitly advertised his message. The radio likewise should serve the physician and be made by him to illuminate his gospel of good health. Medical men now prepare articles for magazines, for the radio and for the public press covering all the phases of medical knowledge.

I am proud to state with the greatest emphasis that the medical profession is well able to supply the brains for any and all nation wide efforts for individual and community health education that the great business publications and the advertising world will undertake to promulgate and finance. This statement is the challenge of organized medicine! I pledge its fulfilment so far as lies within my power, and I sincerely hope that influential laymen of our country will accept the challenge.

Physicians until recently have contributed insufficiently to public health education. Today every licensed physician is being urged to prepare himself to teach his own patients the principles of health. Sufficient progress has already been made to warrant the statement that the field of public health education must and should be invaded by the physician. Organized medicine has approved this measure. The House of Delegates of the American Medical Association is on record as favoring every measure of public health education, including periodical medical examinations of the supposedly healthy. Two years ago the board of trustees entered this field on a larger scale by establishing *Hygeia,* a monthly public health journal published distinctly for the lay public. *Hygeia,* devoted to individual and community health, has already qualified as the leading public health journal of America. Its columns contain information of the utmost value covering the whole field of medicine. The lay reader is told what to do and what not to do regarding health affairs, and every issue contains exposures of vicious nostrums and quackery. Clip sheets from every issue of *Hygeia* are furnished to hundreds of newspapers, so that already millions of our people are receiving this direct and valuable health service.

Furthermore, many of our great newspaper syndicates, great daily newspapers and reputable magazines refuse to publish any material pertaining to health except on reliable medical approval. The propaganda of quackery and vicious nostrum advertising are refused by these great publications in the interest of the public health. Indeed, in health matters, many of these publications rely constantly on the advice received from the American Medical Association headquarters. Radio instruction in public health is rapidly increasing as a result of definite programs arranged by state and county medical societies. Other legitimate public health agencies are also active in this field.

PERIODICAL PHYSICAL EXAMINATION

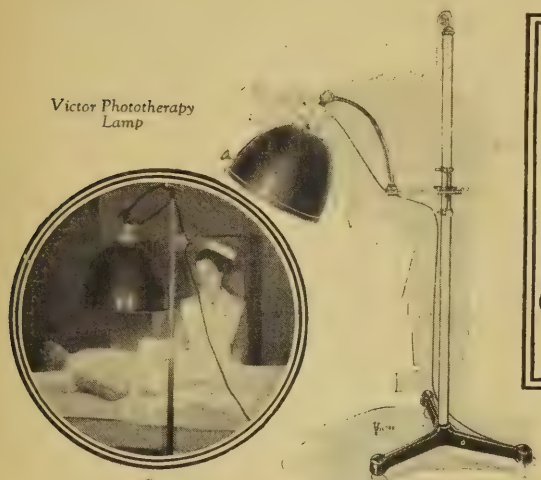
Periodical physical examination of the supposedly healthy is a public health measure that has the approval of the medical profession. The members of state and county medical societies are being urged not only to undertake the actual work of examination but to promote this healthful measure. The task of educating the one hundred and twenty million people of our country in personal and public health matters is stupendous, and its promulgation will require the combined efforts of medical men as teachers, of influential laymen and great publications as promoters. Physicians believe that whenever this great task shall have been accomplished in any nation, state or community, the average life of the inhabitants involved will be increased at least another seven years over the twenty that have been gained in the last half century.

Knowledge of the great principles involved in the preservation of health and of the great historical proof of preventive medicine will lead legislators and others in responsibility to protect every community against the blandishments of unlicensed quackery, the enmity of antimedical propagandists, and the evils of nostrum medication.

Public officials are already beginning to appreciate their responsibility regarding public health measures. In his recent message to the New York State legislature, Hon. Alfred E. Smith, governor of New York, proclaimed that "one of the great functions of government is the preservation of public health." He further said:

"I renew the recommendation of a year ago that careful consideration be given to the protection of the people of the state from unlicensed and unqualified persons practising medicine. The cooperation of the medical profession is an essential factor in the protection of the public health, as well as in the care of the sick. A very large part of modern public health is urging people to get the advice of their physicians before serious and perhaps incurable conditions have developed. Such effort comes to naught if unqualified persons are allowed to hold themselves out as physicians. The subject is a difficult one, but the state of New York should take the lead in establishing high standards of medical practice, and providing a practicable plan for their enforcement. It is a matter of justice to qualified physicians and of protection to the public."

Let us hope that all state governors and all legislators will emulate the fine example of humanitarianism set by the governor of the Empire State.



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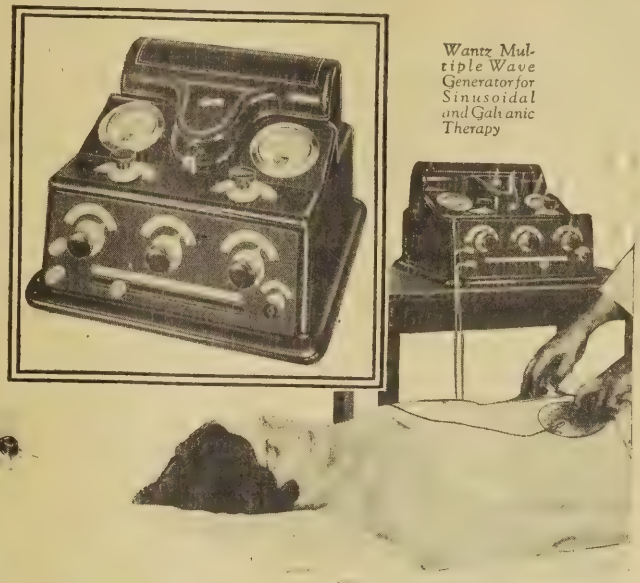

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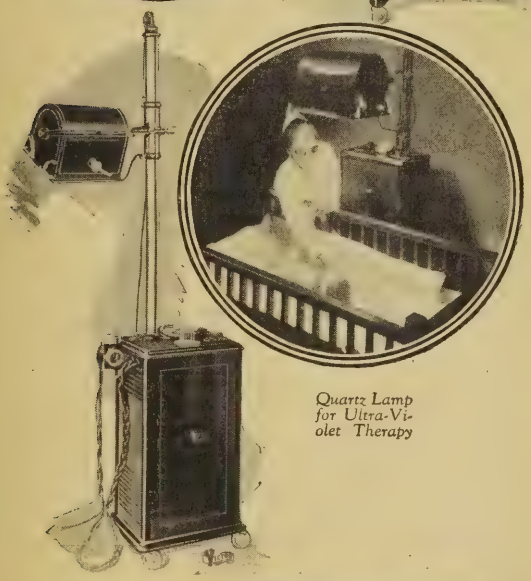

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HEALTH EDUCATION FROM THE VIEWPOINT OF THE PHYSICIAN

The proposed campaign of public health education will surely create a demand for new contacts between patient and physician. Physicians must give a new significance to the word patient, for in the new order of things both sick and well people must and will be recorded in the lists of their physicians. In one of his recent addresses, Dr. George E. Vincent has called attention to the demands which this newly informed public is likely to make.

"They will demand that their needs should be met," he has said, and he warns that unless the medical profession shall organize to meet the demand in the proper spirit, various forms of state medicine are likely to become the order of the day. "No thoughtful person can welcome the extension of state medicine beyond the legitimate and necessary field of public health activity, but if private initiative and voluntary cooperation fail, it may be impossible to resist the demand for governmental intervention" in the practice of medicine. In other words, the state may be called on to organize and control not only methods of medical treatment but also the financial remuneration of the physician. I believe that this is unnecessary, but it surely will come unless we ourselves give heed to the coming needs and formulate our modes and methods to meet this demand in the spirit of true medicine. For medical agitators to stand on the housetops and shout defiance to state medicine will never solve a problem which can only be solved by perfecting a better way. The better way is to promote by precept and example the vast importance of maintaining the personal relationship of physician and patient. This is an essential fundamental in medical practice. For this principle, which the medical men of wide vision are contending today, no brighter example can be named than the late Sir James Mackenzie. He was a far sighted student of mankind who devoted the later years of his life to preaching this beneficent gospel.

Wilson, a disciple of Mackenzie, in *Pygmalion, or the Doctor of the Future,* outlines a most vivid picture of the spirit of medicine advocated by Sir James Mackenzie, emphasizing that the intimate relationship of the coming medical man with his patient is to become more intimate than our present day leaders in medicine have demanded. "Once upon a time," he says, "the priest was the doctor," but, "tomorrow the doctor may well have become the priest, in a new sense of the word." Not deprecating the necessary scientific preparation for his calling, this physician of the future must be "a humanist, a man with the widest and deepest possible knowledge of human nature, and the profoundest possible understanding of human motives. He will be a cultured man, ripe in intellectual attainments, but not lacking in emotional sympathy, a lover of the arts as well as a student of sciences. This is, indeed, no more than a projection into the future of a gracious figure of the past—for the great physicians of other days were all, likewise, great citizens of humanity." There must be less of the machine or mechanical physician and more of the individual.

Our great leaders in medicine have emphasized fully the fact that this physician of the future, if he expects to meet the new demands in such a manner as to prevent the unfortunate entry into the practice of medicine of socalled state medicine, must prepare himself educationally, morally, psychologically and sociologically, to make the painstaking intimate personal contact with his individual patient so effective, outstanding and unassailable that no other form of medical practice will be permitted by the layman himself.

What have I described? No new word need be coined for the answer. The future health needs of the public can best be supplied by a more humane painstaking, better qualified, general practitioner of medicine. The family physician should remain the foundation of medical service. His outlook, functions and training need modification to meet changing needs. The field will be great and the opportunity for service boundless. The loyal service of the idea general practitioner of medicine will go far to limi the advent of insurance methods of treatment, stat systems, industrial groups, and other socialized prin ciples which the true psychologists and humanists i medicine look on as mechanistic, soulless, bureau cratic, card index systems, discounting the spirit o individual relationship characterized by the bette way.

The gospel of good health is based largely on th principles of preventive medicine. Our associatio endorses every proper method for promoting a phases of preventive medicine. Periodical examina tion of the apparently healthy is one of our project which promises well for the future as an importan agency for preservation of individual good healt The American Medical Association is pledged to thi measure, and state and county societies are rapidl becoming alive to its importance. Sufficient progres has already been made to demonstrate the fact tha many of the illnesses of life are unknown to the pa tient during the incipient stages. This procedu enables one's physician to detect the first danger si nal of any form of disease and to cope with it durir its incipient and curable stage.

This family physician must educate his patien and community in preventive medicine and be some extent a health administrator. His chief re and his chief service will be to keep his patients we Evidently, such service can be made possible only maintaining intimate, clinical information, well r corded, regarding every man, woman and child w seeks his service. And every man, woman and chi in every community should have his health record in the files of his family physician. Too many of o inhabitants worry through life with only fairly go health, and while they accomplish their daily duti these fairly well persons may never know the exub ance and happiness of perfect health. Hence, c goal of the future practitioner of medicine will the attainment and maintenance of exuberant heal which is the inherent right of every person. A hig average of overflowing good health means a hig average of happiness, comfort, usefulness and e nomic value of the individual. The superman v never materialize without superhealth.

THE EDUCATION OF THE FUTURE PHYSICIAN

Fundamentally, the business of the undergradu medical school is to teach scientific medicine. T application of the science of medicine on the part the physician constitutes the art of medicine, kno

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edge of which should be supplied by the undergraduate curriculum. At the outset it should be clearly affirmed with the fullest emphasis that the practice of medicine is in no wise a business, and those who purpose to enter this field of service should remember that their material interests must always remain a secondary consideration and that its emoluments may never be reckoned in terms of finance. The education of the physician of the future must provide instruction in the art of medicine as well as in the science of medicine—not less of the science, but more of the art is the educational need of the hour.

This view of medical education of the physician presages the future output of medical men whose scientific thinking will smack less of the mechanical, less of the technic of the laboratory, and more in the terms of the humanist. He must be taught to think more in terms of life, health and humanity than of disease and death. The medical education of the present places too much emphasis on the material and too little on the spiritual phases of medical practice. The student of medicine must be taught how to care for and advise the man as well as the patient. To this end, nothing need be done to disturb the high standards of medical education which the American Medical Association has set. It is necessary, however, that greater elasticity be given through proper modification of the present curriculum and policies of medical education.

The student should come in contact in the ambulatory department and at the bedside with patients for selfstudy under proper guidance and control. His course should include neurology, psychiatry, dermatology and the study of the diseases of children. It should also include instruction on the principles of both general and special surgery. A reasonable time should be devoted to ophthalmology, to otolaryngology, and to genitourinary and other special diseases.

I find myself in agreement with Billings that the ideal general practitioner "must have a good knowledge of general and physiological chemistry, of human anatomy and physiology, of pharmacology, of general pathology with constant training through the four years of residence in morbid anatomy, of epidemiology, immunology and psychology. In the clinical branches he must have the training of his brain, special senses and hands in the recognition of disease. He must learn to use the simple diagnostic aids in the form of instruments and laboratory tests. With this knowledge of the methods of diagnosis, he must have constant and daily opportunity to study disease as expressed in the ambulatory and ward patients. He must have an opportunity to observe the etiological relations of occupations, environment, social conditions and other factors in disease. He must learn and recognize the importance of community as well as individual disease. He must have the opportunity to observe the results of medical treatment and management and the final condition of the patient after operative surgery. He must have an opportunity to witness minor surgical operations, emergency surgery, and especially to have practical training in the treatment of fractures of the bones and dislocations." In the hospital he should have an opportunity for the practical study of dietetics and of dietotherapy. He should have practical experience in the measures of disinfection in the sickroom and especially in the control of communicable diseases. "Finally, in addition to the educational qualifications, both academic and medical, the family physician must be a man of character. His daily life must be a practical expression of honesty, morality and resourcefulness in service to his patients. He will have a due consideration of his own health and responsibilities, and at proper periods will play as he works with well directed energy, giving and asking half the road and fair play."

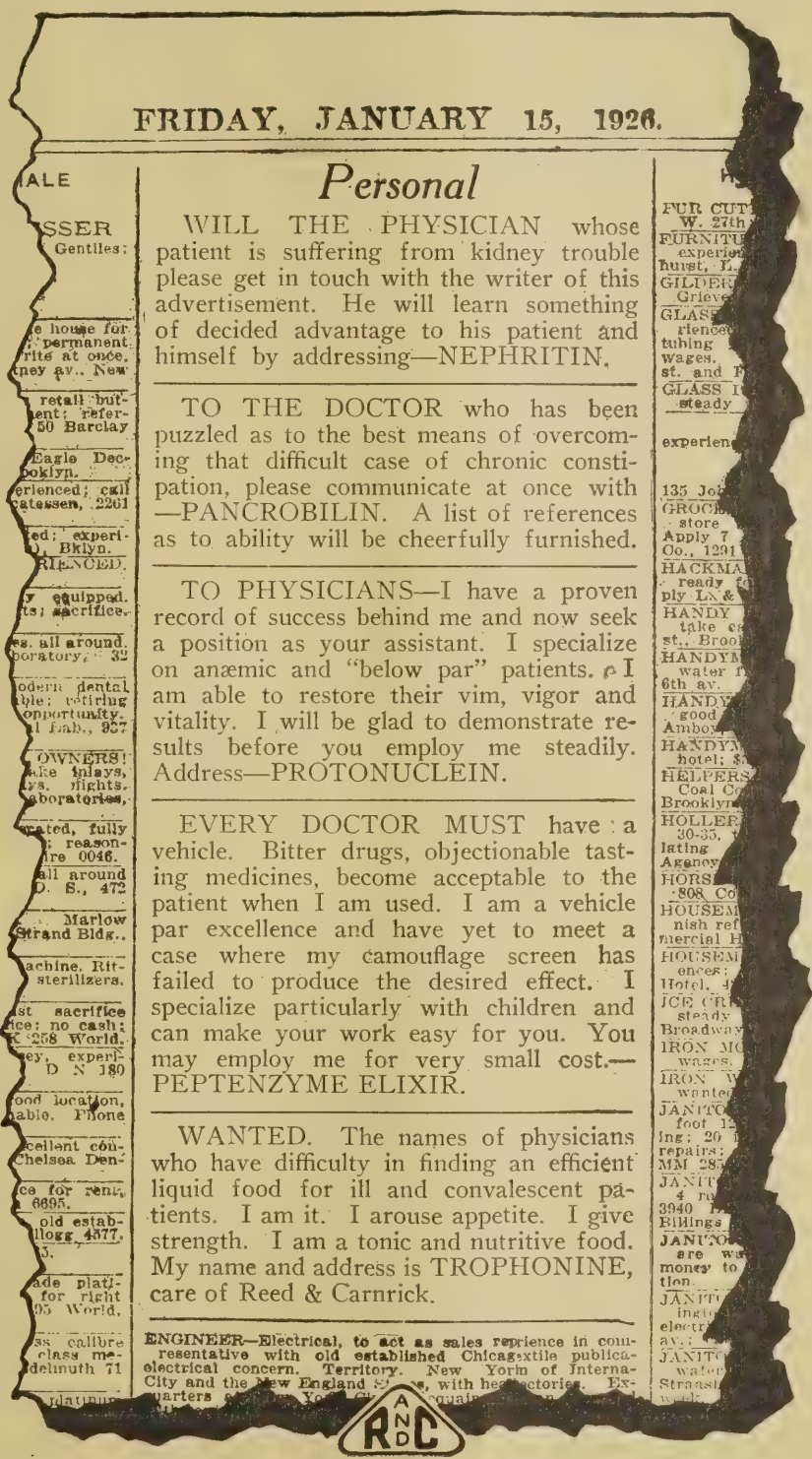
That these changes in the curriculum may be brought about, influence should be brought to bear on the state licensing boards to abolish the nonsensical requirement of a stated number of hours of study in each branch of the curriculum. Obviously, a four year course of study of medicine, preclinical and clinical, is not too long, particularly in view of the fact that every student should receive additional common sense instruction in public health, preventive medicine, psychology and sociology so far as the term applies to the necessary alliance of medical and social sciences in the prevention and palliation of disease.

Every undergraduate medical school should make the necessary changes in the undergraduate curriculum to provide for these additional subjects. The curriculum should further provide instruction in principles of professional conduct and the highest ideals of medical ethics.

If our future practitioner fails in these things, his "place in the sun" will progressively diminish and his rôle will be invaded by industrial, state and various group practices which will be a great disadvantage to our inhabitants. The family physician should remain the foundation of medical service.

In view of these added requirements in the education of the future physician, it is unthinkable even to contemplate any lowering of the standards of medical education. Nor should a limited medical training be approved for men who might be willing to practise in rural communities. Any claim for a limited medical training is fallacious in reasoning and untenable, for the reason that the best in medical care is none too good for our lowliest inhabitants, no matter where they reside. It is sometimes argued that physicians of mature years, graduates of a former generation, have been successful even though the educational requirements of that day covered not more than two or three years. But it must be remembered that this was the full medical education for its day, and the graduates of that day have reached distinction in the profession and have made valuable contributions to medicine, surgery and pathology, not because of their limited medical education, but in spite of those limitations.

It is true that in certain limited areas in our land there is some scarcity of physicians. It is also a fact that for some years, particularly during the World War period, fewer men entered the medical schools; but soon after the war the numbers began to increase, and, according to the report of the Council on Medical Education and Hospitals of the American Medical Association, the higher entrance requirements are not preventing students from entering the field of medicine. The total enrolment of medical students in the United States since 1919 has



FRIDAY, JANUARY 15, 1926.

Personal

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increased at the rate of about one thousand a year, and in 1925 the approximate total enrollment of medical students in this country was 18,368. The proportion of students who are either partially or wholly selfsupporting during their medical course is as large now as it was in the former days. Furthermore, the majority of the medical schools of the country are never able to accept all the students who clamor for admission. Possibly a larger number of medical schools should be provided in order to educate the number necessary to meet the needs of communities.

In view of the great expense involved in the maintenance of our medical schools, and in view of the fact that a large proportion of this expense is a contribution from philanthropic sources, every school should enroll the largest possible number of students. No school should reduce its enrollment to less than fifty students in a class, and the larger and better equipped schools should increase the number further to at least eighty or ninety to a class. Furthermore, the undergraduate medical school should limit its teaching to the output of all round qualified general practitioners of medicine only, and it should in no sense attempt to prepare men for the various specialties. Preparation for all the specialties should be entirely dependent on graduate schools of medicine. So far as our country is concerned, courses for specializing may be secured through graduate medical teachings in the universities and postgraduate schools. The courses for the majority of the specialties should cover a period of at least three years. In several of the specialties in this country, particularly the eye, ear, nose and throat, examination boards have been created for men who desire to be formally recognized by the national societies. Fortunately, it is no longer necessary for men to seek the graduate training in foreign countries. Under this scheme of education, every specialist must first receive the preliminary training required by the general practitioner of medicine.

Careful estimates would indicate that properly qualified general practitioners of medicine, aided by moderate home laboratory facilities, will be able to make a correct diagnosis and give all necessary instruction and treatment to at least eighty per cent. of all the people who seek his aid, while twenty per cent. of specialists, including internists and general surgeons, all thoroughly educated and trained, will be ample in number to care for the sick who need highly specialized service. Furthermore, the same proportion will to a large extent hold true of those who require hospital and special laboratory service.

Regarding the distribution of physicians throughout the country, it is a fact that the urban population has rapidly increased and now is in excess of the rural. This proportion of the general population is emphasized to a greater degree in the distribution of physicians. There are various explanations of this fact, the chief of which are the advent of the automobile and better living conditions, educational, social and otherwise, in the larger towns. "The properly trained and educated young general practitioner, the product of the medical school which has made its curriculum elastic and modified to make a practitioner, will be fit to practice in either the city or the country. To induce him to go to the country will require improvement in social and educational opportunity in rural districts. This is rapidly coming about, but needs stimulation through cooperative endeavor from the medical profession, educators of the country and other agencies who will bring about better schools and facilities for social enjoyment."

NEED OF HOSPITALS

Time will permit only a brief mention of the hospital as a necessary facility in medical practice. At present, twenty-five per cent. or less of the practitioners, both city and country, have hospital facilities. Hospitals or similar facilities for the application of the refinements in diagnosis and treatment should be available in all communities, and particularly in rural districts. At present it seems somewhat difficult to supply proper hospital facilities in many rural communities, but our proposed extensive program of public health education should lead the enlightened laity to meet this demand. Every physician should be in contact with hospital facilities and experience—his progress in his profession depends on it. In every instance, particularly in rural communities, open staff organizations are preferred; but hospitals connected with medical schools must necessarily be closed staff organizations. It is possible that in other hospitals the open staff organization could be made practicable by having a socalled executive staff or regular attendants in all departments who would be responsible for the character of the professional conduct of the hospital, and this staff would be supplemented by an auxiliary or associated staff properly classified and made associate members of the executive staff departments. This would afford every worthy physician of the community a hospital connection, but he would be obliged to follow the regulations of the hospital made and adopted by the executive staff.

CONCLUSIONS

May I venture the following conclusions and opinions:

The scheme of undergraduate medical education should be reconstructed to include in its curriculum as a prominent feature the science and art of health conservation, and the art of applying the principles of the science of medicine through the personal relationship of the physician and his patient. The undergraduate student must be trained to treat the body from the viewpoint of health as well as that of disease.

These added requirements to the educational program of the future physician emphasize the argument against any lowering of the standards of medical education or lessening of the time involved in the teaching process.

Public health education is an outstanding need of the hour. The gospel of personal and community health is complex. It should be promulgated by health departments and agencies, by lectures, radio and film; but it will never reach its highest efficiency until it includes a maximum of direct personal instruction by properly qualified family physicians.

The patient of the future, in view of his perfected health education, may be expected to derive from it a wise judgment which will lead him to seek the continued advice and counsel of his personal physician. Furthermore, in view of our perfected

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Restoration *of* Function

should be the purpose of any agent given in the presence of constipation or irregular bowel action.

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system of individual and community health education, cults and other menaces to public health, all of which are founded on theories for the most part baseless and futile, will gradually disappear before the rising sun of enlightened public opinion.

The ideal family physician of the future by training, by experience, and by expert knowledge of health conservation will derive a potential power which will qualify him to control and direct the health problems of men.

The family physician of the future must have proportionate representation in the councils of his profession. No specialty or combination of specialties, not even general surgery, should be permitted to dominate the health affairs of a community or of a nation.

It is true that the service rendered by a physician may not be considered in terms of finance, but in no sense should our physician of the future offer this as an excuse for slothfulness in the management of his business affairs. Every detail of his newer service in the prevention of disease is of great value to his patient. Health education and conservation are services of value even greater to the patient than the sums paid for helping the body to repair the ravages of disease.

The maintenance of individual practice in the person of the general practitioner or family physician is of the utmost importance for the survival and continuation of the family home as the foundation of the nation.

Finally, let us hope that the physician of the future will be fully conscious of the vastness of the causes which he must advocate and the usefulness of the deeds he must accomplish; that he may have wisdom, poise and capacity of understanding that will breed in his patient an extraordinary confidence and esteem; that he may have a vision of a healthier, happier world which will blossom into unheard of activity. May we hope that to this end he will dedicate himself "through service to all that will advance and maintain and increase the sum of human happiness."

Every man who looks toward the future is charged with being a dreamer. But the verdict of history has always been that the onward march of science, religion and civilization has been led by dreamers. I have ventured modestly to tell my dream, knowing that it will find a thousand responsive chords in the hearts of my colleagues whose ambition and passion are to serve our fellowmen.

Who dreams shall live. And if we do not dream
Then we shall build no temple into time.
Yon dust cloud, whirling slow against the sun,
Was yesterday's cathedral, stirred to gold
By heedless footsteps of a passing world.
The faiths of stone and steel are failed of proof,
The king who made religion of a sword
Passes, and is forgotten in a day.
The crown he wore rots at a lily's root,
The rose unfurls her banners o'er his dust.
The dreamer dies, but never dies the dream.
Though Death shall call the whirlwind to his aid.
Enlist men's passions, trick their hearts with hate,
Still shall the vision live. Say nevermore
That dreams are fragile things. What else endures
Of all this broken world save only dreams!
—*Dana Burnet.*

30 EAST FIFTY-EIGHTH STREET.

The Scientific Proceedings

We present below abstracts of some of the more important papers read at the various section meetings. The publication of these abstracts will be continued in future issues of the JOURNAL.

SECTION ON PRACTICE OF MEDICINE

CHAIRMAN, DR. E. S. KILGORE, OF SAN FRANCISCO.
SECRETARY, DR. BRYCE W. FONTAINE, OF MEMPHIS, TENN.

Method of Following Treatment in Diabetes.—Dr. Rollin T. Woodyatt, of Chicago, said that in following cases of diabetes one wishes to follow the variations of the patient's power to utilize glucose. If at one time he is capable of utilizing 150 grams per twenty-four hours and at a later time 120 grams, his sugar using function has decreased, and so forth. If a given individual on a certain day receives from all sources the equivalent of 150 grams of glucose and eliminates 50, he utilizes the difference or 100 grams for the day. If he receives the equivalent of 200 grams and excretes 50 he utilizes 150. What we wish to know is how many grams of glucose per unit of body weight per unit of time the patient can utilize, i. e., the rate of glucose utilization.

The question arises as to how we may measure the rate of glucose utilization in diabetic patients under clinical care in the most practical way. The percentage of sugar in the urine taken by itself gives no index. The total quantity excreted in the day taken by itself is of little more value. The difference between the rate of supply and the rate of excretion is, however, an absolute index.

There is a certain parallelism between variations of the rate of utilization of sugar and the blood sugar concentration. However, the relationship between the blood sugar concentration and the rate of glucose utilization is subject to more or less variation. Measurement of the total excretion of sugar in the urine by a method such as that of Folin and Berglund for the quantitative estimation of sugar in the normal urine, taken in conjunction with knowledge of the diet offers an easier, cheaper and in the main more exact method of following variations of the glucose using power than any other available method. The total output for a given period of time tends to vary as the *average* blood sugar percentage during that entire time. But to find the average blood sugar percentage by direct readings requires multiple punctures of the patient and multiple analyses, entailing extra work, expense and discomfort. The same information is obtainable by uranalysis (if the method of analysis is sufficiently exact), cheaper, with less discomfort to the patient, and withal more accurately, since the figure obtained in the urine is an aggregate for all of the hours of the period during which the specimen was collected.

The paper presented experiments and clinical data showing the theoretical and practical advantages of following cases by diet and urine rather than blood data.

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It may be administered orally in pills and capsules or a solution in enemata.

Diatussin

Its almost specific action in Whooping Cough is shown by the marked decrease in severity and number of paroxysms during the first twenty-four hours of treatment.

Its ameliorative influence in other spasmodic coughs is also very pronounced and gratifying.

Descriptive literature on request.

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Chronic and Recurrent Bronchitis Simulating Tuberculosis.—Dr. Charles N. Meader of Denver, Colo., said that there existed a type of mild, subacute nontuberculous peribronchitis, which might produce interference with the patient's comfort and economic efficiency wholly out of proportion to the physical signs detectable on casual examination. It was to be compared with and differentiated from occult tuberculosis, which might produce closely similar symptoms and signs. Such differentiation could usually be made, but only by careful study and evaluation of the whole clinical picture, including x ray findings and specific tests. It was important that these conditions be recognized and differentiated, because they were capable of much relief; tended, if untreated, to the development of more marked and serious involvement; offered materially different prognoses as to the patient's probable future limitations; and responded to materially different forms of treatment.

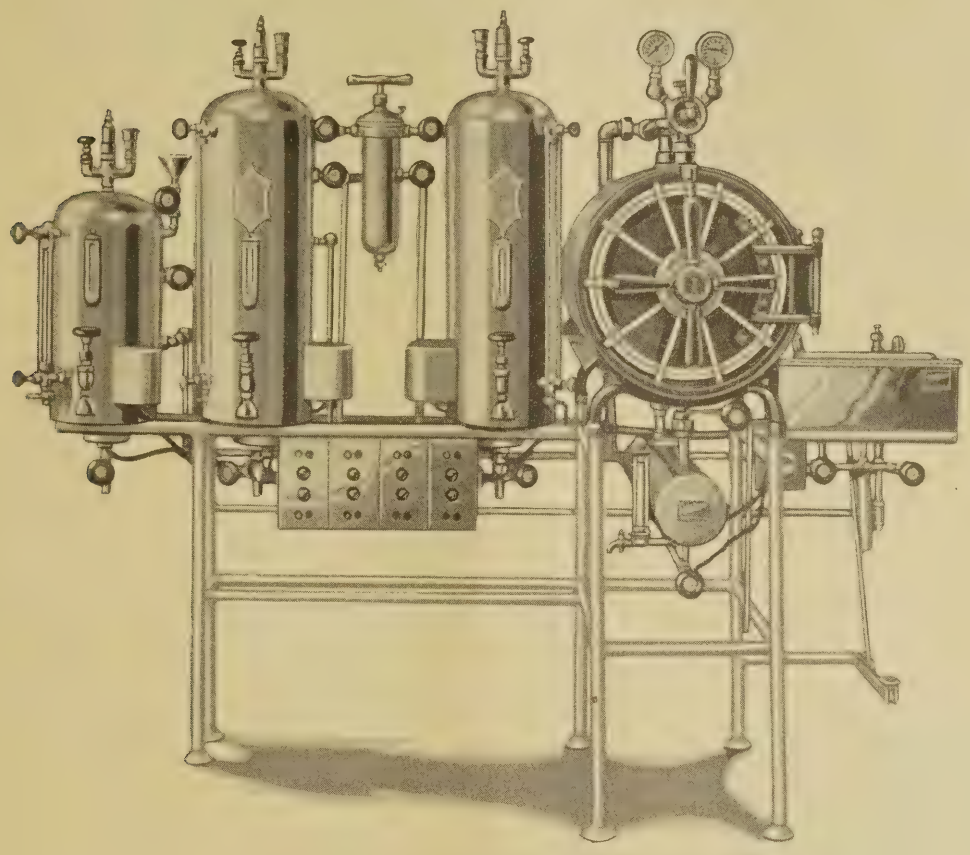
Some Unique Features of Hodgkin's Disease (Lymphogranulomatosis): Clinical and Autopsy Studies.—Dr. Moses Barron, of Minneapolis, Minn., stated that Hodgkin's disease was an anatomical and clinical entity, an infectious granuloma, probably caused by an animal parasite. Absolute diagnosis was possible only by biopsy. Extensive caseation necrosis was sometimes present, which might cause confusion in differential diagnosis from tuberculosis. The symptoms were described. The average duration of the condition was less than two years, and the prognosis was hopeless. Severe secondary anemia was invariable in late stages. Blood picture was not always characteristic. Eosinophilia was frequently present. Disease usually began in lymph nodes, and might invade all tissues and organs. Involvement of vertebræ sometimes caused confusion with Pott's disease. It was sometimes associated with tuberculosis, but tubercle bacillus bore no etiological relationship to the disease; neither did the diphtheroid bacillus nor Bacillus Hodgkini. The disease occurred most frequently during the second and third decades, occurring oftenest in males. In discussing treatment, the x ray he said might cause temporary improvement in symptoms, but did not affect the progress of the disease. Hodgkin's disease with the chronic relapsing type of fever presented one of the most remarkable syndromes in medicine. Three cases were reported, with autopsy study in twenty-four cases.

Rheumatic Pneumonia.—Dr. Meyer A. Rabinowitz, of Brooklyn, N. Y., presented a study of a recent series of cases of acute articular rheumatism and acute rheumatic affection of the heart with special reference to the occurrence of pulmonary manifestations. He reported a group of cases occurring early in the severer types of rheumatic fever without crisis, marked dullness, scant râles and loud bronchial breathing. The posterior areas of chest were usually involved, he said. The prognosis was excellent *per se*. He described a type not conforming to the usual pictures of embolic enfarction, pulmonary edema, atalectasis due to pericardial or plural effusion, bronchopneumonia or croupous pneumonia. Is there a true pneumonia, he asked, due to rheumatic virus? Are these lung lesions not specific in nature but dependent on cardiac dilatation and insufficiency? Splenization of the lung as a clinical entity, was discussed, its etiology, pathology, symptoms, and differential diagnosis.

Precordial Pain.—Dr. Eugene S. Kilgore, of San Francisco, Cal., in his chairman's address, said that the analysis of a group of office patients complaining of pain about the heart or sternum showed a large preponderance of cases which were not true angina pectoris, and that this study concerned itself mainly with the diagnosis of what might still profitably be termed "pseudoangina." Various types of this pain are observed, the most common having a stabbing or piercing quality. All gradations of this type of pain occur, from the common "stitch in the side," which most persons have felt, to what some patients describe as terrific pain "like a stroke of lightning through the heart." He said that among the causes of pseudoangina, psychic trauma played an important rôle. This is often administered by the well meaning but unskillful doctor, who fails to recognize the innocent character of the symptom. The author believes that the practical application of the result of the study is a plea for better initial diagnoses and more careful psychic handling of these cases.

Practical Considerations of Renal Physiology and Function.—Dr. Philip S. Hench, of Rochester, Minn., said that a concise understanding of renal physiology and its relation to its function was of importance in the management of chronic nephritis. The functions of the kidney could be readily outlined. Regarding renal physiology, however, apparently contradictory evidence had resulted in various theories of the *modus operandi*. A brief survey was useful to differentiate such knowledge of practical importance to clinical medicine from that of less direct or only theoretical bearing. The four established functions of the kidney were, 1, the excretion of certain nonvolatile end products of metabolism: urea, uric acid, etc.; 2, the regulation of the body economy for water and salt; 3, maintenance of the acid base equilibrium of the body; and 4, the synthesis of hippuric acid and possibly some urinary ammonia.

The two main thories of renal physiology was the "vital" theory of Bowman and Haidenhain and the "mechanistic" theory of Ludwig. The "modern" theory of Cushny had in part been supported by the work of recent investigators, notably Starling and Verney, Richards, and Marshall and Crane. Summarizing the various theories would lead to the present acceptance of the belief that a mechanical filtration of a protein free fluid occurred through the glomeruli. This filtrate was further elaborated into the urine by the action of tubules through a process of reabsorption alone, or of reabsorption plus active secretion. The author remarked that physiological data can not always be brought into direct relationship with pathological findings in nephritis. Although confusion may result from an attempt to correlate physiological conceptions, clinical syndromes and pathological data, the clinician can from the viewpoint of practice honestly sidestep such confusion by a consideration purely of the clinical picture. By the use of a few simple clinical observations and a few readily available laboratory procedures, a sufficiently correct differentiation of the type of renal lesion



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present can be attained, and with it direct indications for treatment and prognosis.

Albuminuria, though the earliest, most readily detected aberration of normal renal function, is present in about five per cent. of apparently healthy people. The differentiation of significant and insignificant albuminurias is of prime importance and can be done only by a careful analysis of readily available clinical and laboratory data.

Volhard and Fahr's classification of nephritis was advocated and compared to others. The four main types of chronic renal lesions were, 1, chronic glomerular nephritis, associated with urinary findings of albumin, casts, erythrocytes, with nitrogen retention in the blood, with changes in blood pressure, eye grounds, heart, and blood count; 2, chronic nephrosis, associated mainly with albuminuria and edema and without systemic changes; 3, chronic focal nephritis, characterized by erythrocytes, albumin and casts in the urine without nitrogen retention or systemic body changes, and 4, arteriosclerotic nephritis, a more or less incidental finding eventually manifesting itself by a moderate albuminuria, a slight degree of nitrogen or dye retention and slowly progressive and comparatively benign renal insufficiency.

These forms may be differentiated by clinical findings and the use of five simple tests: 1, the phenolsulphonephthalein test; 2, water, dilution, test; 3, concentration test; 4, the determination of urea retention by means of the estimation of the mercury combining power of blood or of saliva—the salivary urea index; and 5, the hemoglobin and the erythrocyte count.

The author stated that the determination of the mercury combining power of blood or saliva were new tests which may be readily made within ten or fifteen minutes with a minimum of laboratory apparatus and gave the same information as the determination of blood urea. Prognostic information may also be obtained by certain clinical observations and these simple function tests. Scientific therapy depended upon the recognition of the types of functional disturbance present. Although clinical classifications may not be clear in individual cases and may have to be disregarded, functional classification must be attempted. Principles and methods of treatment were outlined in some detail. These included the use of certain new diuretics with which therapeutic successes heretofore unattainable have been obtained.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

CHAIRMAN, DR. DALLAS B. PHEMISTER, OF CHICAGO.
SECRETARY, DR. J. TATE MASON, OF SEATTLE.

The Interrelation of Lesions of Bone Marrow, Liver, and Spleen.—Dr. William J. Mayo, of Rochester, Minnesota, said:

Fairly accurate knowledge of the structure of the cellular elements of the blood has been gained through the microscope, but the constituents of the plasma lie in the colloid and molecular fields beyond microscopic observation. Fortunately great additions have been made to scientific data through newer work in physiochemistry, by which the ultramicroscopic field has been presented in such form that we can better elucidate its many problems. In photography a method has been perfected of fixing movements of particulate bodies which are too small or in too rapid motion for the eye to take cognizance of them.

The red blood cells are the oxygen carriers of the body and are formed in the bone marrow; the blood platelets are formed in the megakaryocytes of the bone marrow and have to do with the clotting of the blood; the white blood cells are formed in the reticuloendothelial tissues and have properties of repair and defense. In the normal blood the hemoglobin carries from 18.5 to 20 per cent. of oxygen by volume, in loose combination.

In pernicious anemia the patient is unable to produce normal red blood cells.

In polycythemia, there is an enormous increase in red cells, and a great development of the hemoglobin. The consequent increase in the viscosity of the blood adds to the work of the heart, and often results in cardiac hypertrophy and eventually muscle failure, of the type seen in cases of grave hypertension.

In hemolytic icterus the production of the red blood cells is increased, probably a work hypertrophy to attempt to compensate for the unnecessary destruction of red cells in the spleen. In hemorrhagic purpura there is destruction of the blood platelets in the spleen with prolongation of the bleeding time. The blood clots, but the clot does not contract normally.

The liver is the great metabolic organ of the human body, and is essential for both carbohydrate and protein metabolism, as evidenced by Mann's work proving that the normal blood sugar level cannot be maintained, and urea is not formed without the liver. The work of the liver is done on venous blood which has a decreased oxygen content, and consequent slight power to metabolize fat. The blood plasma is largely formed in the liver.

The rate of elimination of dyes from the blood stream, when introduced intravenously, is in direct proportion to the size of the molecule of the dye, and has given much information as to the functions of the kidneys, the liver, and other organs.

One of the most important functions of the liver is the detoxication of chemical substances and the destruction of bacteria and protozoa.

The spleen is a hemolymph gland, and as such belongs to the reticuloendothelial system. Because it is only one of a large group of similar tissues, its removal causes little or no change in the functions of the body. While physiologically the spleen is not very important, pathologically it is extremely important.

The spleen also acts as a coarse filter to remove microorganisms from the blood stream. Those which it cannot destroy it sends ordinarily to the liver for destruction, sometimes resulting in portal cirrhosis. Often the spleen becomes a habitat for bacteria and protozoa which it is unable to destroy completely or send to the liver, and consequently gives rise to the reinfections so often seen in the splenomegalia of syphilis, malaria, and tuberculosis, manifested by chronic anemia and failure to respond to remedial agents.

Dr. Mayo appended to this paper a statistical review of 424 cases of splenectomy.

Results of Animal Experiments With Osteoperiosteal Bone Graft.—Dr. George M. Dorrance and Dr. George Wagoner, of Philadelphia, said that

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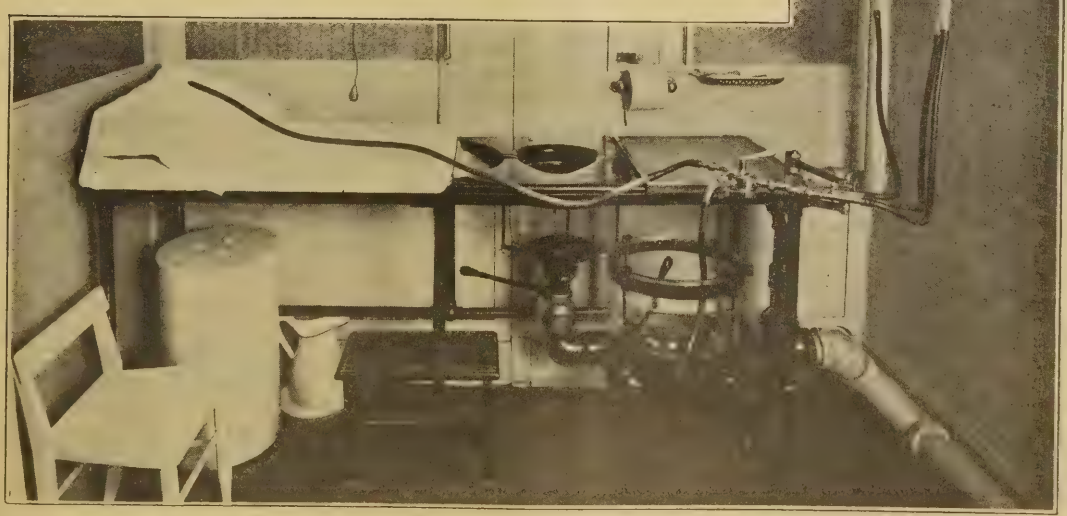

clinical and experimental researches showed that it was possible to reproduce bone or to reunite an ununited fracture by means of an osteoperiosteal bone graft. The bone graft increased in size and thickness to conform to the surrounding bone. It was especially applicable where a curved surface or angle was necessary, as in the jaw or skull. Animal experimentations have proved it was possible to produce an extraarticular ankylosis by exposing the bone above the joint and the bone below the joint and connecting one incision to the other by undermining the skin. The graft was connected to the upper bone, then passed through the tunnel under the skin down to the bone below. This then was the extraarticular connection of the bone above to the bone below. The x ray showed that bony union had been produced.

The authors stated that while Albee's contention was that the full thickness graft will grow through a tuberculous area, it seemed unwise to open up an infected wound, and that by having the bone graft go around the joint, the same results would be obtained. They did not discuss whether a full thickness graft or periosteal was superior to the other, but asserted that they had separate indications and were almost interchangeable. The technic of the ostoperiosteal graft was simpler and did not require the armamentarium that the full thickness graft required. The particular issue was the production of ankylosis by the osteoperiosteal method.

Local Anesthesia as an Adjunct in the Treatment of Nontuberculous Lesions in Tuberculous Patients.—Dr. Stanley R. Maxeiner, of Minneapolis, Minn., said that patients suffering from tuberculosis were subject to the same general diseases that other people had. Careful gastrointestinal and x ray study often revealed a gastric or duodenal ulcer, cholecystitis, obscure appendicitis or painful visceroparietal adhesions. The author said that he had treated carcinoma of the lip, exophthalmic goitre, acute mastoiditis, and other conditions, and had performed for tuberculous and nontuberculous lesions more than two hundred major and minor operations under local anesthesia alone without a postoperative pneumonia or operative mortality.

SECTION ON OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY

CHAIRMAN, DR. GEORGE GRAY WARD, OF NEW YORK.
SECRETARY, DR. CARL H. DAVIS, OF MILWAUKEE.

Chronic Endocervicitis, Its Etiology, Symptomatology and Secondary Pelvic Manifestations.—Dr. C. Jeff Miller, of New Orleans, said: No uniformly satisfactory treatment has as yet been found for endocervicitis, the commonest of all gynecological affections, due largely to the fact that the histology and pathology of the cervix are not sufficiently considered. These facts are stressed in this introductory paper, which is necessarily elementary. The comparative histology and function of the cervix and uterine body are considered, with emphasis on the fact that the complicated structure of the cervix makes it peculiarly fitted for the harboring of bacteria. The possible etiology includes specific and other infections, cervical lacerations, congenital erosions, and local and systemic conditions. Certain cases remain inexplicable. All types of bacteria are involved, the gonococcus being the most frequent. The pathology may include inflammatory changes, eversion, erosion, cystic formation and hypertrophy. The symptomatology may include leucorrhea, menstrual derangements, backache, dyspareunia, sterility, and pelvic and systemic manifestations. Diagnosis is usually simple but should always include laboratory studies. Cervical tuberculosis, syphilis and malignancy must be differentiated, as well as infections of the upper and lower genital tract. The cervix is a possible source of infection in systemic conditions, but the question is not yet settled. Any treatment to be successful must be based upon the underlying pathology of the deeper cervical structures.

Myomectomy, Hysterectomy, and Radium in the Treatment of Uterine Fibromyomata.—Dr. James C. Masson, of Rochester, Minn., said that symptomless fibromyomata demand no treatment. Radiotherapy is indicated in all patients, over forty years of age with fibromyomata under fifteen cm. in diameter when menorrhagia is the chief complaint; in patients under forty years of age when the patient refuses surgical removal or where there is some added risk to a major operation; and in all cases of *fibrosus uteri* or cases with essential hemorrhages. Surgery is indicated for fibromyomata, 1, in most patients under forty years of age; 2, in most patients where pain or bladder irritability is associated with fibromyomata; 3, in any patient in whom a tumor over 15 c.m. in diameter is present; 4, when a tumor is pedunculated, submucous or undergoing degeneration or inflammation; 5, when there is any doubt about the tumor being a fibromyoma; and 6, when any other indication for opening into the abdomen exists. Of the surgical cases, abdominal myomectomy should be the operation of choice for the majority of patients under forty years. Vaginal myomectomy is indicated if a fibromyoma is presenting through the cervix. Subtotal abdominal hysterectomy should only be performed in women under forty years when it is necessary to remove the greater part of the body of the uterus and when the cervix is in good condition. Total abdominal hysterectomy is the operation in the best interest of the patient when any pathology other than cancer exists in the cervix and an abdominal operation is advisable, and when the history suggests the possibility of malignant change in the fibromyomata or an associated malignant condition in the body of the uterus.

Pregnancy Complicating Exophthalmic Goitre and Adenomatous Goitre With Hyperthyroidism.—Dr. Robert D. Mussey, Dr. William A. Plummer, and Dr. Walter M. Boothby, of Rochester, Minn., said that since 1916 pregnancy has been observed at the Mayo Clinic in thirty-two patients having exophthalmic goitre and in ten having adenomatous goitre with hyperthyroidism. As the hyperthyroid states developed in all but two of the forty-two patients before the onset of pregnancy, their association seemed accidental. No maternal death occurred as a result of the hyperthyroid states. There were two spontaneous abortions and two premature labors apparently associated in large part with other complications. Therefore, the risk inherent in each of these conditions was not greatly increased. Either

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ligation, thyroidectomy, or both were performed on thirty-four patients without mortality and since the introduction of iodine as an aid in the treatment of exophthalmic goitre, ligations were found unnecessary as a preliminary procedure to thyroidectomy. Therefore, when advisable for the control of exophthalmic goitre, or adenomatous goitre with hyperthyroidism, thyroidectomy can be carried out with proper precautions on the pregnant woman with reasonable safety to both mother and fetus.

Magnesium Sulphate Intravenously in the Treatment of Toxemia.—Dr. Lyle G. McNeile and Dr. John Vruwink, of Los Angeles, Cal., said that a ten per cent. solution of recrystallized magnesium sulphate, in doses of ten to twenty-five c.c., given intravenously, is a valuable adjunct in the prevention and care of eclampsia. Experimental and clinical medicine has demonstrated that magnesium sulphate inhibits nervous irritability; that, as a hypertonic solution it will decrease cerebrospinal fluid pressure and reduce brain bulk; and that it has anesthetic properties. It is our experience, the authors said, that it also decreases the congestion and swelling of the kidney and aids in elimination. A series of cases so treated at the Los Angeles General Hospital had given better results than all previous methods of management.

Eclampsia at the Chicago Lyingin Hospital: Immediate and Late Results.—Dr. J. P. Greenhill, of Chicago, Ill., said that during the last eight and one half years, seventy-eight cases of eclampsia were treated at the Chicago Lyingin Hospital. Among these seventy-eight cases there were six maternal deaths, an incidence of 7.7 per cent. If one moribund untreated case was deducted the mortality would be 6.5 per cent. In fifty per cent. the convulsions began before labor, in 20.5 per cent. during labor and in 29.5 per cent. after delivery. The maternal mortality for these groups was 10.3 per cent., 0 per cent., and 8.7 per cent. respectively, and the fetal mortality was forty-one per cent., 18.8 per cent., and 17.4 per cent. respectively. The incidence of operative deliveries was 62.5 per cent. However, while 36.3 per cent. of all the labors terminated spontaneously, labor had been induced in 11.3 per cent. of them. Hence, only twenty-five per cent. of the cases had both a spontaneous onset and spontaneous termination of labor. Convulsions ceased after delivery in 78.2 per cent. of all the cases where they began antepartum or intrapartum. Among the fifteen abdominal Cæsarean sections convulsions began before operation in twelve, and in all of these cases the convulsions ceased after operation.

The maternal mortality for the various forms of delivery was as follows: Spontaneous 3.4 per cent., Cæsarean section 6.7 per cent., forceps 9.5 per cent. and version and extraction 14.3 per cent. The fetal mortality for these groups was as follows: Forceps 9.5 per cent., abdominal Cæsarean section 17.6 per cent., version and extraction 28.6 per cent., spontaneous thirty per cent., and vaginal Cæsarean section 100 per cent. Among the seventy-eight patients, fifty-nine per cent. had no prenatal care at all, twenty-three per cent. had very poor observation during pregnancy and eighteen per cent. had good prenatal care.

There were five pairs of twins, 6.4 per cent. Among the eighty-three babies there were twenty-three deaths (27.7 per cent.). However, the fetal mortality of the seventy-five babies that were alive when their mothers entered the hospital was only twenty per cent. Of the fifteen dead babies which constituted this twenty per cent. only one weighed more than two thousand grams, four pounds seven ounces. Only 62.7 per cent. of the babies weighed two thousand grams or more.

Of the 72 patients who left the hospital alive, sixty, 83.3 per cent., were traced. Of this number two died of chronic nephritis, three now have chronic nephritis and fifty-five, 91.7 per cent., are well. Among eighteen subsequent pregnancies ten ended normally and one was in progress now. One patient had another attack of eclampsia and three had pre-eclamptic symptoms for which the pregnancies were ended. Hence, among the patients who completely recovered after the attack of eclampsia of those who subsequently became pregnant, 26.7 per cent. presented signs and symptoms of toxemia. These patients again recovered completely.

As a result of this study the author thought that the treatment of antepartum and intrapartum eclampsia should not be entirely conservative nor entirely radical. However, in experienced hands he favored emptying the uterus in most cases, and the method selected, he said, depended upon the condition of the patient, the size of the baby and the state of the cervix. Where the patient was a primipara with a viable baby and the cervix was undilated, he preferred to terminate pregnancy by a low or cervical Cæsarean section under local anesthesia as soon after the first convulsion as possible. He believed that all patients with eclampsia should be sent to a hospital. When a patient must remain at home the treatment should be conservative. It should also be conservative in a hospital when the attending physician was not skilled in operative obstetrics.

Radium in the Treatment of Cancer of the Cervix Uteri.—Dr. Grant E. Ward, of Baltimore, said that the purpose of his paper was twofold. First, to describe the technic for treatment of cancers of the cervix developed at the Howard A. Kelly Hospital in the last eighteen years' experience with radium. This description will include the apparatus used and the principles underlying the technic employed. The second aim of the paper is to review briefly a few statistics from other clinics, and to compare former statistics with a new series which has just been studied. This new series includes those cases treated in the years 1921 and 1922. This group comprises in all 231 cases. A brief review of the cases in this series follows: In the fourteen operable cases treated by radium alone, eight patients have remained well from eight months to four and a half years. In the socalled borderline group, which were really inoperable, four patients out of nineteen were well from two to four years; one recurred after five years. In over fifty per cent. the local lesions were healed. In the cases recurrent after panhysterectomy, forty-one in number, ten patients, or twenty-five per cent., remained well from two months to five years. In the inoperable group, of which there were 141, sixteen showed no evidence of disease when last

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seen. Of the 125 remaining, 101 showed improvement or healing in the local growth. By improvement is meant symptomatically as well as on physical examination. In the 125 inoperable cases which were not cured, twenty-one patients lived from two to four years.

Other groups, such as prophylactic after operation, and those treated by combining radium with cautery, were also discussed.

Cauterization vs. the Sturmdorf Operation in the Treatment of Chronic Endocervicitis.—Dr. Harvey B. Matthews, of Brooklyn, N. Y., said that chronic endocervicitis was the most common pelvic disorder that the gynecologist or general practitioner was called upon to treat. Practically every multiparous and many nulliparous women suffered from more or less leucorrhoeal discharge which was cervical in origin. He said that it had been proved without doubt that chronic endocervicitis was a very prevalent disease; while chronic endometritis, as a pathological entity, was very rarely encountered. Endocervicitis may be acute or chronic. In most instances, when first seen by the physician, the inflammation has already passed from the acute into the subacute or chronic stage, usually chronic. The endocervical mucosa, with its compound racemose glands, offer an ideal nidus for the propagation of bacteria. Once pathogenic bacteria are planted in this situation the resulting inflammatory process becomes very difficult to manage. In fact it was only by eradicating the foci of infection located in the cervical mucous membrane and adjacent cervical glands, often extending from the external to the internal os, that the leucorrheal discharge, backache, bearing down sensation, etc., were relieved. When marked hyperplasia and cystic formation, Nabothian cysts, were present the problem of cure was still more difficult. Furthermore, the author believed the longer the infection remained *in situ* the deeper and wider it disseminated into the endocervical mucous membrane and its glands. He said it would seem, therefore, that the earlier treatment was begun after the infection was implanted the more certain would be the cure. The treatment of chronic endocervicitis was prophylactic and operative.

Under the prophylactic treatment, the author wished only to consider the use of the cautery. Naturally there were many nonoperative methods of treating the infected cervix but which do not come up for consideration at this time. By the judicious use of the small nasal cautery the superficial infection, with eversion and erosion that was so frequently seen ten to twelve weeks postpartum, could be made to heal and "roll in" in three to six weeks. This was accomplished by making several linear incisions, spaced one half to one cm. apart and four to six mm. deep, made over the erosion on the anterior and posterior lips of the cervix and extending well into the canal. The cauterization, if necessary, may be repeated in two weeks. He said that this method of treatment will stop the leucorrheal discharge in almost all cases and the patient will continue very comfortable until the next baby comes along and then the same treatment must be carried out again. The deeply infected, hyperplastic cystic cervix of long standing may be cauterized by using the same technic but by going deeper, wider and further up the cervical canal, up to or near the internal os, with the cautery. The results in these types of cases were not as good as in the more superficially infected type. In these cases, also, stricture or stenosis of the canal with subsequent hematometra must be guarded against. Complete destruction of the endocervical mucosa will surely result in stenosis. Strips or elongated islands of mucous membrane must be left in order for epithelialization to take place with consequent preservation of the cervical canal. Anesthesia may or may not be used for this type of cauterization, depending on the extent of the lesion and amount of cauterization required.

The Sturmdorf operation was designed to remove the infected foci from the cervical canal without taking any or but very little of the cervical body away. When done properly, he said, it was the best means of accomplishing this end. It was not an amputation and should not be so called. It was an excision of the infected mucous membrane substituting noninfected mucous membrane for infected. It does not interfere with pregnancy or labor any more than trachelorrhaphy, which is practically nil.

In comparing the efficacy of these two methods of treatment of chronic endocervicitis, it would seem fair to state that cauterization was indicated in all superficially infected, moderately eroded and everted, not too extensively lacerated cervices that should have something done but which were not sufficiently severe to warrant operation by the Sturmdorf method. In other words, cauterization was "a between childbirth" form of treatment that was quite efficacious in relieving the leucorrheal discharge and preventing deeper and more extensive chronic infection within the cervical canal and thus preventing the onset of other pelvic symptoms. The Sturmdorf operation, in his opinion, the author said, is the best surgical method we possess for removal of the gland bearing infected cervical mucous membrane but should be reserved for those cases that have deep and extensive infections with cystic changes that cannot be cured with the cautery. Also for those cases of rather marked chronic endocervicitis which must be operated upon for other pelvic lesions and, hence, must take an anesthetic. We do not consider the electric cautery and the Sturmdorf excision operation rival procedures; but believe that they each have very definite indication and that when these indications are fulfilled they offer the most satisfactory means of curing chronic endocervicitis that we, at present, possess.

Low Calcium as a Cause of Intrauterine Mortality.—Dr. Daniel Macomber, of Boston, stated that the importance of calcium in relation to reproduction had long been known. The work of E. V. McCollum, Osborne and Mendel, Hart and Steenboch and their associates had well established this fact. In 1921 Reynolds and Macomber reported the result of a preliminary study of the effect of low calcium upon fertility. None of the previous work, however, had been done with purified substances in the diet on a quantitative basis (with the exception of experiments carried on by Osborne and Mendel) and none had involved a careful study of fertility, pregnancy and lactation in the same animal. For these reasons the present study was undertaken. Ac-

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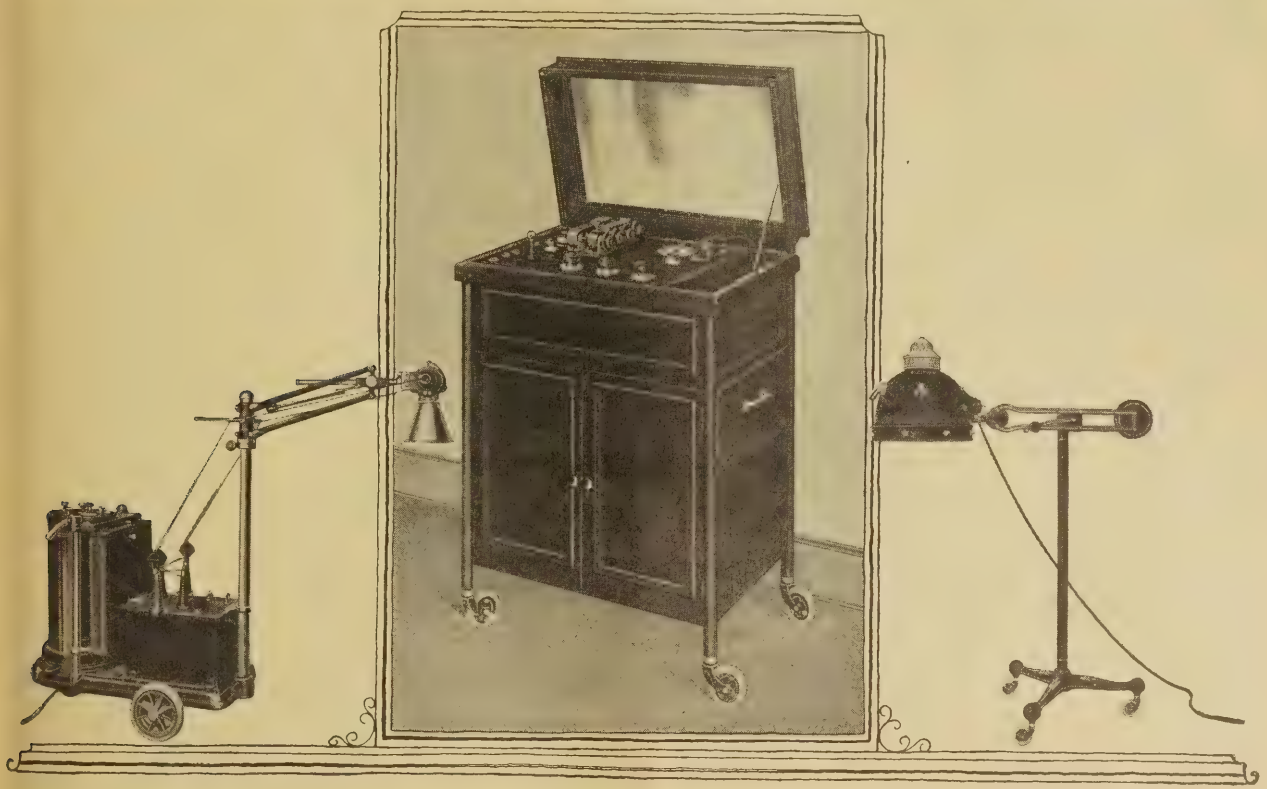

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cordingly some sixty-five animals were placed upon a diet containing twenty per cent. casein, four per cent. salt mixture, twenty per cent. lard, and fifty-six per cent. starch. In addition each animal received 0.2 grams yeast, 0.3 grams cod liver oil, and ten grams of lettuce daily. Half of these animals were on a salt mixture which contained no calcium, and half were on a salt mixture which contained five and one half milligrams of calcium to the gram of diet. Each rat ate on the average somewhat less than ten grams of the diet a day. The controls therefore where allowance was made for all calcium in the lettuce, the casein in the drinking water, etc., received on the average about six centigrams of calcium a day and the rats on the diet low in calcium only about six milligrams a day.

The animals were mated during the first stage and if a pregnancy developed were operated upon at about the midpoint and the corpora lutea counted. The number of corpora lutea was subsequently compared with the number of young at birth. In all somewhat more than two hundred pregnancies were observed involving nearly twelve hundred young. The intrauterine mortality for the controls was nineteen per cent.—for the low calcium diet twenty-five per cent., a difference of about thirty per cent., amply large to be significant. The low calcium diet then did materially decrease fertility, but as far as could be determined there was no difference whatever in the weights of the individual young. When the young were analyzed there was, however, a marked difference in the calcium content. Four young from a rat which had been on the control diet during pregnancy contained 0.47 grams of calcium, while four young from a rat on the low calcium diet contained only 0.30 grams. This difference became even more marked during lactation and it was rare indeed that a mother could bring even three or four young to a successful weaning where her diet was low in calcium. Control mothers were able to nurse successfully litters of six to eight. The young themselves from mothers on low calcium were stunted and contained less calcium than those whose mothers were on the control diet. Finally the mothers showed a progressive decalcification as shown by x ray and analyses.

A summary of the results therefore would be that low calcium definitely affects fertility to a slight but statistically significant degree; that it affects pregnancy and lactation by limiting the amount of calcium available for the fetus or nursing young and by causing a definite drain upon the mother. Animals which were not submitted to pregnancy or lactation showed the least drain and those which had undergone pregnancy and lactation the most. The presence of calcium in the diet of the pregnant or nursing human mother becomes then a matter of the greatest importance.

SECTION ON OPHTHALMOLOGY

CHAIRMAN, DR. ARNOLD KNAPP, OF NEW YORK.
SECRETARY, DR. WILLIAM C. FENNOFF, OF DENVER.

Blepharochalasis.—Dr. W. L. Benedict, Chief of Section of Ophthalmology, Mayo Clinic, Rochester, said that blepharochalasis was a disease of the upper eyelids characterized by bagginess and atrophy of the skin. It is usually found in young adults and begins as an intermittent swelling lasting a few hours, the attacks coming on at intervals of a few days to a few weeks. Succeeding attacks last longer and appear more frequently until a permanent swelling of the lids with great thinning of the skin and bagginess of the lids results. The disease is more commonly found in young girls but has been observed in young boys and even in men of fifty or more years.

Little is known regarding the etiology of the disease. The attacks of transient edema appear usually about the time of puberty and the attacks in young girls have been thought to bear some relation to menstruation. In no case, however, has it been reported that the swelling was always coincident with menstruation nor changed to any extent at the period of menstruation.

The occurrence of the disease in boys as well as in girls clearly shows that it is not directly related to menstruation, yet the onset at about the same age, that is from ten to seventeen years, places it definitely within the period of functional endocrine development; and perhaps it is a result of that development. That the condition may bear some relation to the development of the thyroid has been suggested by Ascher. In 1919 he described cases in which he noted the occurrence of blepharochalasis with struma and double lip. In 1922, he again called attention to this syndrome and reported two other cases.

In a large surgical clinic in which many cases of goitre were seen, Dr. Benedict said that the syndrome was not noted by him, neither had the syndrome been noted among goitre patients at the Mayo Clinic. He also said that blepharochalasis had not been observed in patients having exophthalmic goitre.

Blepharochalasis is to be found in two stages. The first is the intumescent stage, or stage of edema. The early attacks of swelling resemble those of angioneurotic edema and last usually from two to four days, without pain, and with only slight redness of the skin. after several attacks of swelling one of two things occurs: 1, the swelling becomes constant with bagginess of the skin of the lids so that loose folds hang down over the margin, giving the appearance of water filled bags with the skin slightly altered in color, very thin, and slightly wrinkled or folded; or 2, the swelling disappears entirely or occurs for only short times at intervals of weeks or months, and the skin becomes reddish brown, wrinkled and is thrown into horizontal folds resembling brown wrinkled cigaret paper. The latter condition causes less interference with vision but may be accompanied by true ptosis. This wrinkled and atrophic condition of the skin is the end stage of the disease. It has been confused with chronic atonic ptosis which condition it, indeed, closely resembles, but the latter condition can always be differentiated by the absence of the attacks of swelling.

The only treatment suggested for the relief of blepharochalasis is excision of the redundant skin and subcutaneous tissue, with fixation of the lower margin of the wound to the upper border of the tarsus. If the association of the disease with the development of the endocrine glands can be substantiated, it is probable that some medical treatment can be applied for relief during the intumescent stage. For the

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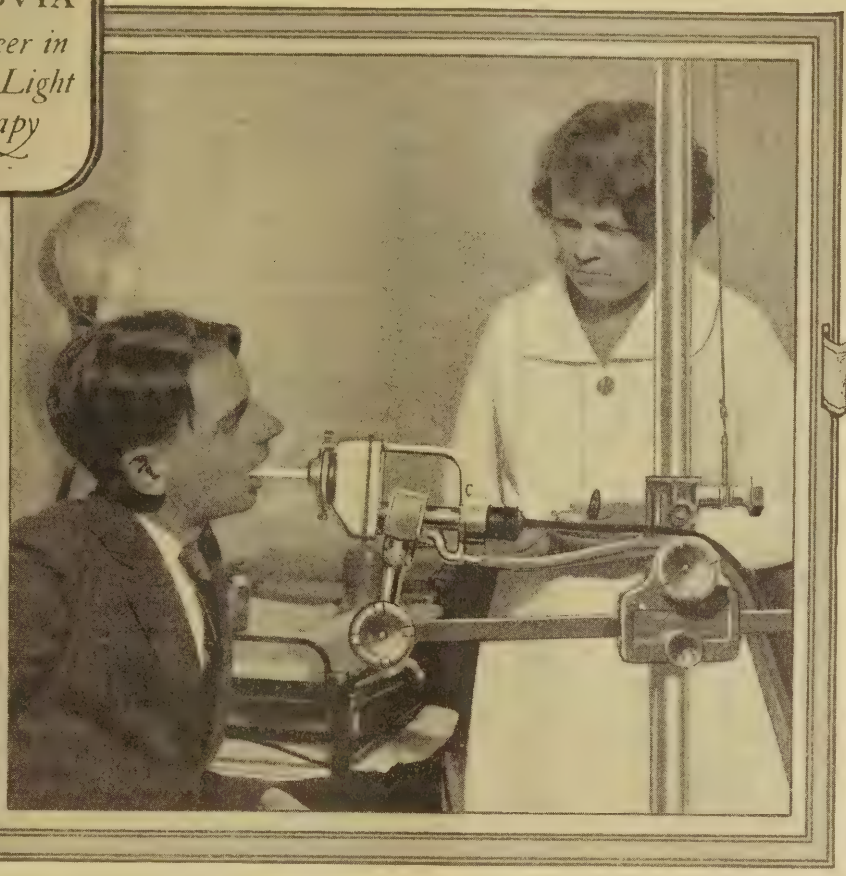

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SECTION ON LARYNGOLOGY, OTOLOGY, AND RHINOLOGY

CHAIRMAN, DR. SAMUEL IGLAUER, OF CINCINNATI.
SECRETARY, DR. WILLIAM V. MULLIN, OF CLEVELAND.

The Diagnostic Ear Clinic in the Public Schools as a Factor in the Conservation of Hearing.—Dr. Horace Newhart, of Minneapolis, Minnesota, said statistics proved that normal hearing acuity existed in less than fifty per cent. of children of school age. Impairment of hearing at this age signified in many cases the presence of pathological conditions which if not remedied might cause decided hearing loss during subsequent years. Only by regular, careful, periodical examinations of the hearing acuity of all school children could we hope to discover the presence of a slight hearing loss in the many individuals who had it.

Ear examinations as heretofore conducted on a large scale among school children, although legally obligatory in twenty states, had been inadequate for this purpose. Modern methods chiefly through the use of the multiple telephone audiometer made such examinations practically and economically possible. These examinations in our larger cities would be best conducted by a diagnostic ear clinic instituted and controlled by the school authorities. The functions of such a clinic should be carefully defined and limited to diagnostic work. There should be no encroachment upon the field of the private physician or of clinics doing creditable therapeutic work.

The Surgical Treatment of Acute Suppurative Paranasal Sinusitis.—Dr. John J. Shea, of Memphis, Tenn., discussed briefly the surgical treatment of acute suppurative sinusitis, which was of great interest to the physician not doing this type of work. It was really a link between the pediatrist and the rhinologist. The lecture was based on well established principles and practice.

The treatment of acute purulent sinusitis was discussed as emergency treatment and its similarity to acute surgical conditions of the abdomen shown. Incision and rubber tube drainage were given as emergency treatment. The technic of treatment of each sinus was given and the differences and similarities of adult and infant shown. The frequency of childhood infections and consequent failure of sinus growth were discussed and röntgenographic studies shown. Dr. Shea did not consider a sinus cleared of infection until growth could be demonstrated. The technic given for maxillary treatment of these cases was original, the end result being a small rubber tube left in the antrum and nasal vestibule for irrigation or suction.

The prevalence of sphenoid infection and its frequent association with headaches in children were discussed.

Hysterical Dysphagia.—Dr. Herman J. Moersch and Dr. H. Milton Conner, of Rochester, Minn., said hysterical dysphagia was a type of functional dysphagia which is characterized by a sense of obstruction at or about the esophageal introitus, practically always associated with pallor and secondary anemia, and frequently with enlargement of the spleen. The line of demarcation between hysterical dysphagia and other types of functional dysphagia is not always clear or definite, although as a whole hysterical dysphagia represents a very definite clinical entity.

Sixty-five cases were studied, all of which were in women. The average age for the group was forty-five years and the average duration of symptoms eight years. The spleen was palpable in twenty cases, and the average hemoglobin for the entire group was forty-eight per cent. The peculiar pallor in these cases somewhat resembled that of pernicious anemia. Röntgenological examination of the esophagus was negative in fifty cases, but esophagoscopic examination showed that the mucous membrane of the upper part of the esophagus was dry and atrophic with loss of elasticity, and that it bled easily on manipulation.

The treatment consists in passing a plain esophageal sound into the stomach, guided by a previously swallowed silk thread. The size of the sound is immaterial. Usually nothing further is necessary to effect a cure except reassurance. The dysphagia disappears, the blood picture is improved at once, and the spleen may return to normal size. If the trouble recurs, a second passage of the sound will always afford relief.

SECTION ON DISEASES OF CHILDREN

CHAIRMAN, DR. CLIFFORD G. GRULEE, OF CHICAGO.
SECRETARY, DR. HUGH MC CULLOCH, OF ST. LOUIS.

Relationship to Infection in Upper Respiratory Area.—Dr. William J. Mullin, of Cleveland, Ohio, said that experiments on animals had demonstrated routes of absorption from nasal accessory sinuses to the deep cervical chain, peribronchial and mediastinal glands and general circulation. This was substantiated by the clinical evidence. The chronic hyperplastic type of sinus disease was most important in producing secondary infections in the chest. The maxillary sinus was the greatest etiological factor because of its early development and liability to infection, poor ventilation and drainage. Infectious diseases, malnutrition and perhaps heredity paved the way. Secondary chest infections, he said, were acute and chronic bronchitis, bronchiectasis and bronchial asthma.

Hemorrhage From the Intestine Due to Meckel's Diverticulum.—Dr. Isaac Abt and Dr. Alfred A. Strauss, of Chicago, presented the case reports of five infants who were all brought to the hospital with the same complaint, bleeding from the intestine, manifested by the passage of black tarry stools. The infants ranged from nine to twenty months of age, four were males and one a female. In none of the cases were there any symptoms other than the passage of the black stools and progressively developing anemia.

No abnormal findings could be demonstrated on physical examination. Medical treatment of the condition was attempted in the first case but without results. At operation, the cause of the bleeding was found in all the cases to be due to Meckel's diverticula

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which had undergone inflammatory changes. The diverticulum was successfully resected in all five cases. The authors briefly described the operative technic employed.

A review of the French, German and American literature showed that there had been fourteen cases where Meckel's diverticulum had been accompanied by bleeding from the intestine. In most of these an ulcer was demonstrable in the diverticulum. Many showed heteroplasia of the mucosa with gastric glands present. In almost all perforation with the development of peritonitis preceded the operation.

The authors discussed the symptomatology relative to making the diagnosis preoperatively.

Exophthalmic Goitre in Childhood. — Dr. Henry F. Helmholz, of the Mayo Clinic, Rochester, Minnesota, presented a study of thirty cases of exophthalmic goitre seen in children up to the age of fourteen years; age incidence, signs and symptoms, basal metabolic readings, the use of Lugol's solution in lowering the basal metabolic rate and treatment.

SECTION ON PHARMACOLOGY AND THERAPEUTICS

CHAIRMAN, DR. THOMAS ORDWAY, OF ALBANY, N. Y.
SECRETARY, DR. N. M. KEITH, OF ROCHESTER.

The Action and Clinical Use of Ephedrine, an Alkaloid Isolated from the Chinese Drug, Ma Huang.—Dr. K. K. Chen, of Madison, Wis., and Dr. Carl F. Schmidt, Philadelphia, said that the crude drug ma huang *ephedra vulgaris, var. helvetics,* has been in medical use in China for more than 5,000 years. No scientific study was made until Yamanashi (1885), Nagai (1887), and Merck (1888) isolated an alkaloid named ephedrine. Brief pharmacological investigation was undertaken by Takahashi and Miura, and later by Amatsu and Kubota. In 1923 Chen reisolated ephedrine from the stems by a different method. The alkaloid has been submitted to extensive experimentation by the authors. He said it acts like epinephrine, only its effects are much more prolonged. When taken by mouth, in doses of 100 to 150 mgm., it raises blood pressure for several hours, and relieves certain types of asthma. Ephedrine shrinks congested nasal mucosa for an average of two to three hours without subsequent vasodilatation. The drug is stable and has a low toxicity. Favorable clinical results have been reported by many investigators.

Thyroid Therapy and Thyroid Tolerance in Chronic Nephrosis.—Albert A. Epstein, of New York, said the term "nephrosis" had been applied to a group of nephropathies which presented certain definite clinical manifestations with characteristic blood and urinary findings. Among these there were certain cases which showed no evidence of inflammatory renal involvement, but in which all the manifestations pointed to a primary metabolic disorder. To this subdivision he had applied the term "diabetes albuminuricus."

The object in the treatment of this disease was threefold: 1, To replace as much as possible the protein lost from the blood; 2, to compel the tissues to utilize the lipoid accumulation in the blood; and 3, to reestablish normal metabolism. These requirements were best fulfilled by feeding the patients the high protein, fat poor diet which he had introduced some years ago. In certain cases the high protein diet accomplished all that was required of it; in certain other cases it stopped short of a complete cure. In these cases the addition of thyroid therapy would accomplish this result. There were still other cases in which the protein therapy would not produce any effect until thyroid was administered. It was often necessary, however, to give the thyroid in increasing doses until a definite effect was produced. In certain instances the tolerance for thyroid extract was quite remarkable and very large doses were required.

SECTION ON PATHOLOGY AND PHYSIOLOGY

CHAIRMAN, DR. HARRY J. COWPER, OF DENVER.
SECRETARY, DR. JOSIAH J. MOORE, OF CHICAGO.

Avitaminosis, With Symptoms and Lesions of Beriberi Predominating, Occurring in the Course of Diabetes.—Dr. Michael G. Wohl, of Omaha, Neb., said that among the many diseases classified as avitaminosis, beriberi and keratomalacia have received considerable attention. Human and animal feeding experiments have proved that both of these diseases essentially follow deprivation of water soluble vitamine B and fat soluble vitamine A, respectively. In this country patients presenting symptoms of beriberi or of keratomalacia are rather uncommon. This was rather surprising, he said, considering the great number of patients who were on restricted diets. He felt that there must be a greater number of cases which may show individual symptoms of these diseases, but pass unrecognized as such.

The author has studied both the clinical and post mortem findings of a patient who came under his observation, who developed during the course of a restricted diabetic diet cardiac neurotoxic symptoms of beriberi and the eye symptoms analogous to keratomalacia. From a study of the literature and of this case, a few points suggested themselves, deductions from which were sufficiently cogent to merit mention, such as: 1, extreme muscle weakness, which occurred during the course of diabetes, and which could hardly be explained by the loss of calories. Food deficient in vitamines which caused atrophy of the glands of internal secretions. The deficiency need not necessarily be complete. The symptom of asthenia during diabetes could be accounted for on the basis of histological changes induced by avitaminosis in the endocrine glands; 2, neuralgic pains might possibly be explained as due to the disordered metabolism of nerve cells with more extensive degeneration incident to avitaminosis when continued for too long a time. Twenty-two patients out of eighty diabetics studied, showed symptoms of paraesthesia, partial loss of knee jerks and neuralgic pains particularly in calves. A careful inquiry into the dietary habits revealed that sixteen of them consumed food poor in vitamines, such as potatoes, bread, meat, etc.; 3, constipation was a common symptom diabetics complained of. It has been found that vitamine B deficiency produced intestinal stasis, atrophy of abdominal muscle and disordered function or actual degeneration of nervous tissue. The most remarkable point

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Diabetes and Constipation

Due In Part To Vitamin B Deficiency

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The American food bulk is vitamin deficient; particularly in the B vitamins. That constipation, diabetes, and a train of other disorders are due in the main to this deficiency is now confirmed by an amount of clinical evidence, from workers in America and Europe of such ability, as can be no longer questioned.

The facts are now up to the physician.

Gastro-Intestinal Disorders

McCarrison in "Deficiency Diseases," as the result of wide studies in London, Asia and India, pointed out:

"The health of the gastro-intestinal tract is dependent on an adequate provision of accessory food factors; especially Vitamins B and C. The absence of Vitamin B is capable of producing pathological changes in the tract which frequently assume the clinical form of colitis. This observation is of the highest importance in view of the frequency of this malady."

Disorders of the Pancreas

Mendel, McCarrison, Lopez-Lomba, Klotz and Hopfner have found that a diet deficient in Vitamin B affects the health and a normal functioning of the pancreas. Yeast extract, rich in Vitamin B, has been successfully used by Klotz and Hopfner in Germany, and by Levine and others in the United States as a diet aid in reducing the sugar content in diabetes.

Constipation and Intestinal Stasis

Dr. R. H. A. Plimmer of St. Thomas' Hospital, University of London, has completed and reported a two-years' study of the amount of B vitamin needed in the diet. The *British Medical Journal,* in reviewing the work states:

The experiments showed very clearly that one of the chief effects of a partial deficiency of vitamin B was to produce intestinal stasis which resulted in the retention in the bowel of putrid food residues and the absorption of products of putrefaction. McCarrison had noted this intestinal effect.

Professor Plimmer suggested that the fundamental effect of vitamin B lack was to produce atony of the gut, and that polyneuritis was possibly due to absorption of some toxic products of putrefaction. He pointed out that these experiments raised the very serious question as to whether the supply of vitamin B in normal human diets was really adequate.

Dr. Louis Gross, of Montreal, working with the British Medical Association of London, studied the activity of the alimentary canal in vitamin deficiency, and adequate vitamin feeding. He used the VEGEX yeast extract as the source of his vitamin B, and found that the administration of small quantities of VEGEX extract restored the normal number of scybala per day.

Diabetes in Part a Vitamin B Deficiency Disease

The report of Dr. Michael G. Wohl of Omaha at the Dallas Convention of the A. M. A. confirms these findings with clinical data which can be no longer questioned. Dr. Wohl finds that atrophy of the glands of internal secretion, asthemia during diabetes, disordered metabolism of nerve cells, intestinal stasis, atrophy of abdominal muscle, the disordered functional capacity of the pancreas and constipation in diabetes are due, in a large part, to vitamin deficiency and particularly to vitamin B deficiency. Dr. Wohl cites the work of Gross and the report states:

"The most remarkable point in experimental work by Gross was that the intestines seemed to feel the need of vitamin B almost immediately."

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In all of the work, yeast extract or the vitamin from yeast has been used as a source of the B vitamin. In most of the work the VEGEX yeast extract has been selected as the richest and most dependable source of the vitamin. It is free from fermentation and spoilage, does not contain carbohydrates and sugar, and is very palatable.

The Vitamin-Deficient Food Bulk

The evidence, to quote the *British Medical Journal,* "shatters the comfortable belief that we have enough vitamins in the diet." The American food bulk is vitamin-deficient. Refined sugar, vegetable fats and oils, white flour and meat products make up a total of 2300 calories per individual per day. The evidence now shows the wide train of disorders which have followed the vitamin deficiency. It is not made up by vegetables. There are not enough produced, not enough consumed. Milk consumption is less than one-third of the requirement per capita and milk is deficient in the B vitamin and in other factors necessary for adolescent growth and adult health.

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in experimental work by Gross was that the intestine seemed to feel the need of vitamine B almost immediately. The idea that constipation in diabetics was possibly dependent upon improper food rather than the diabetic condition as such was not inconsistent with the above facts. Eight diabetics with obstinate constipation received each 800 milligrams per day of Osborne and Wakeman fraction of yeast vitamine B. Six gained normal bowel movement and two have improved. Increase in the incidence of diabetes in this country may be attributed to the changed conditions, especially with respect to food habits, consumption of luxurious but vitamine deficient food. The author said the lack of vitamine in the food had a depressing effect upon the functional capacity of the pancreas. A case was reported with postmortem findings.

The author's conclusions were, 1, the purpose of this paper was to emphasize the rôle which avitaminosis possibly played in the production of symptoms in cases of diabetes mellitus; 2, insufficient training of both parent and patient in the care of diabetes were possibly responsible for such avitamosis and led to disaster for the patient; 3, the clinical and pathological findings of a diabetic patient who developed a condition like beriberi and eye lesions somewhat analagous to keratomalacia, as a result of improper diet, were described in detail.

SECTION ON NERVOUS AND MENTAL DISEASES

CHAIRMAN, DR. JAMES B. AYER, OF BOSTON.
SECRETARY, DR. JAMES J. POLLOCK, OF CHICAGO.

Glioma of the Pons Varolii Simulating a Frontomotor Growth.—Dr. Tom B. Throckmorton, of Des Moines, Iowa, stated that a hemorrhagic glioma of the left half of the pons produced a symptom group in which the cardinal symptoms of increased intracranial pressure—headache, vomiting, and choked disc—were practically absent, while localizing symptoms pointed more to the possibility of a subcortical growth in the left frontomotor region as evidenced by an unstable emotional state in which forgetfulness and alternating phases of mild exaltation and depression with crying episodes played an important rôle, associated also with a rightsided hemiplegia.

Aneurysms of the Cerebral Vessel; Their Clinical Manifestations and Pathology.—Dr. Harry L. Parker, of Rochester, Minnesota, said that the diagnosis of cerebral aneurysms is somewhat difficult, and they are more frequently found accidentally at necropsy. The factors responsible for their production are mainly arteriosclerosis, congenital weakness of the vessel wall, septic emboli and lues. Lues plays a relatively smaller part in the production of cerebral aneurysms than it does in the vessels elsewhere in the body. The location of cerebral aneurysms is more frequently at or in the neighborhood of the circle of Willis. The course of the disease and symptoms vary according to the underlying cause of the aneurysmal dilatation, the site of the aneurysm and the integrity of the aneurysmal wall. Aneurysms produced from septic emboli produce signs that are likely to be masked by the underlying illness usually acute or chronic vegetative endocarditis. Aneurysms arising from the anterior portion of the circle of Willis produce signs of involvement of the third, fourth, fifth and sixth cranial nerves in the optic tracts. Aneurysms arising from the posterior portion of the circle of Willis tend to compress the pons and medulla and produce corresponding symptoms. Rupture of an aneurysm may produce sudden death with all the signs of hemorrhage at the base of the brain. Commonly there is intermittent leakage of the aneurysm with multiple apoplectiform attacks. There may be little or no signs of illness in between these attacks. More usually there is certain amount of residual symptoms. Four case records illustrating these points were given with the discussion of each case.

Sympathectomy in Angina Pectoris.—Dr. E. C. Cutler, and Dr. J. Fine, of Cleveland, presented a study of sympathectomy in angina pectoris with a lantern demonstration. They stated that angina pectoris was a symptom complex. There were no constant pathological findings; therefore, the condition had been called by some a neurosis. This would not satisfy those who actually studied and treated the condition. Theoretical considerations would seem to justify surgical interruption of the nervous pathway to give symptomatic relief. They then discussed the innervation of the heart. All cardiac sympathetic afferent nerves passed through the stellate ganglia. An overflow of impulses via the vagus could not give the location of pain seen in angina pectoris. A discussion followed of the various forms of operative procedure which had been proposed. Inability to obtain complete relief was common when the operative procedure used did not attack the stellate ganglia. Seven cases were cited, some of which had been observed two to three years after several different forms of operative therapy. The grave risks involved were emphasized, and the difficulty of selecting proper cases. The procedure was still in the experimental phase, they said. Unfortunately animal investigation was of no further assistance. They made an earnest plea that only those patients be operated upon which could be carefully studied before hand and followed for years until the end result was determined. Much indiscriminating operating was now being done. The authors concluded that if any operation was to be done it should include removal of the stellate ganglion, i. e., Jonnesco cervicothoracic sympathectomy.

Some Infantile Etiological Factors of Hysteria.—Dr. M. S. Gregory, of Oklahoma City, said that in addition to the classical definitions of hysteria, he wished to maintain that hysteria was the reaction of the infant; that the specific symptoms were largely repetitions of action patterns established during early life. In consideration of hysteria heredity must be discussed. With many psychiatrists the concept of heredity had changed. No one repudiated heredity but rather believed that mental mechanisms were built upon an inherited basis as reactions to environment, frequently appearing quite independently of heredity.

The babe brought with him by inheritance the intincts of the animal kingdom. He was received by

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one of two types of mothers. One spoiled her babe by excessive care and loving while the other was sensible in its care. The child of the first mother had great difficulty during the weaning and other training. This child had great trouble in adult life, for as an infant is trained and conditioned to receive love and attention during its first year of life, so it will demand love and attention as an adult. During the second and third years of life the mother frequently became ugly and cross and the child was compelled to repress much of its love, and when infantile love is repressed, fear, dread and depression are frequently put into its place.

During the first five years of life the child frequently develops abnormal means of winning its wishes, as by falling upon the floor, kicking and screaming, holding its breath or throwing a fit. When a child wins by abnormal conduct, it will strive as an adult to win by the same type of conduct. Frequently the child is trained by the loving mother to love medicine, and such always enjoys poor health.

In normal families certain relations exist: for example, the boy *loves* and worships mother while he *identifies* himself with his father, i. e., he loves mother but wants to be like father. This mechanism is normal up to a certain degree, but when the boy overloves mother and mother overloves the boy then a serious mental condition exists, for if he is too tightly tied to her he cannot free himself from her, and becomes an infant in his adulthood. He not only may become a hysteric but may become a precox as well. Similarly, the girl may be too tightly tied to her father. She may marry, but failing to receive from her mate the petting of her childhood she may flee from reality by running home to her father, or going to bed and being ill.

An Unusual Case of Subacute Combined Cord Degeneration.—Dr. Walter F. Schaller, of San Francisco, reported the following case: Male, aged fifty-eight, ambulatory, in apparent good general physical and mental health, presented a spastic paraplegia of gradual onset (seven years) and a history of recent unsteadiness on walking. There was clinical evidence of pyramidal tract involvement, but the tests for incoordination and ataxia were inconclusive. No sensory loss, no anemia, leucocytosis, neurosyphilis or inflammatory cerebrospinal fluid was present. A clinical diagnosis was made of spastic paraplegia of undetermined origin. Following a prostatectomy the patient died of pulmonary embolism. A complete necropsy was done. The nervous system showed marked atrophy of the cerebral cortex with the exception of the temporal and occipital lobes, and marked sclerosis of the lateral and posterior columns of the spinal cord. A discussion of the histological picture was presented.

Social and Economic Aspects of Nervous and Mental Disease.—Dr. Theodore Diller, of Pittsburgh, Pa., said that as every one knows nonscientific aspects of disease are of vast importance; yet they are seldom or never discussed at meetings of medical men. The most important of these nonscientific aspects, he said, are the humane, social and economic, and, while they are problems belonging to all classes of disease perhaps most important of all is their relationship to nervous and mental disease. The old fashioned physician who was kindly and humane, often lacked sadly in technical skill; whereas the highly technical physician today, especially among the younger men, often lacks sadly in the human touch. There need be no antagonism between the highly developed technical skill and the human side of the physician's makeup. The scientific and the humane should be combined. They were combined in the great leaders in neurology and psychiatry in a way worthy of emulation. They were combined in a peculiarly intimate way in William Osler, the study of whose life should be required of all medical students. The physician should not only cultivate and develop the humane side himself but he should use his influence to counteract the tendency often seen in nurses and social workers to become too technical and too mechanical. Some of the younger physicians today examine the patient as though he were a mechanical instrument or chemical retort. This is a mechanical world and we are becoming increasingly more urban, and sick people are more and more being cared for in hospitals. There is great danger in organization in that the sacredness of the human personality will be jeopardized. The human qualities of the physician were never more needed than they are today.

The trained nurse, and now the social worker, are of enormous value to the physician, especially if he practises in the city hospital, and used rightly they bring to him social and economic aspects of the patient which otherwise would be impossible. But the physician himself should cultivate the habit of becoming acquainted with members of the patient's family from whom he often derives most helpful information, and from consideration of whom he may better appreciate the sort of man or woman he is dealing with. Personality is sacred. This is close to the religious side—indeed, it is the religious side. The physician recognizes the comfort and support from religion which comes to many men and women and he must account it as a thing to be reckoned with. The value of the earnest, sincere, wise chaplain in the army, navy and sanitorium is widely attested by our best medical men. The physician shows his good heart by the way in which he makes a prognosis. The truth ought to be told; but it may be told in a way that hurts when this is not necessary. The physician should seek to express the truth in a way that hurts the least.

Sickness is expensive business. The necessary part of it is expensive. Hospital charges, consultant's, nurses' and attending physician's fees added together often make a staggering total. Unfortunately much of this cannot be avoided, but some of it can. There are today many unnecessary examinations, consultations, etc. It is plainly the physician's duty to conserve the patient's finances. Often it is difficult or impossible; but he should make what effort he can. The patient should be warned against undertaking hospital expenses which are likely to continue for many months. Here the physician's duty is to think of the welfare of the patient's wife and family as regards financial outlay.

The author states that the whole point of his brief paper was this: Let the physician acquire and employ for the benefit of the patient all possible technical skill; but let him never forget that his patient is a

Let's Reason Together

By C. H. WOODWARD

It is *too late* to call the doctor *after* function of the life-processes has ceased, accordingly, the doctor is *always* called *only* to *restore altered function,* never *ceased* function.

Whatever the *specific condition* may be named—however it may be described—it is *always* a manifestation of *altered* function.

Since the doctor is *always* called *only* to restore altered function to normal function, he *must* of *necessity* be interested in the *fundamentals* on which *function* rests.

Function, or operation of the life-processes, is dependent upon just five things. They are:

Natural air,
Natural water,
Natural sleep,
Natural exercise,
Natural food.

If the doctor, called to treat a patient for *any* condition of *altered function,* ignores or neglects to control these five fundamentals, can he *reasonably expect* to restore his patient to *normal* function?

His first step in restoration is to *control all* these fundamentals.

Ask yourself this *serious question:* What are you doing in controlling the *food* intake of your patients?

Man's food today is practically universally denatured or made unnatural. It is made unnatural through having its nature changed by separation into parts and the rejection of some part, or by cooking in the presence of the oxygen of the air, thereby oxidizing its minerals, evaporating its volatile elements, distilling out its minerals and precipitating them on the walls of the cooking vessel, and changing or destroying its vitamine-effects.

If you boiled your gasoline would it operate your automobile engine normally?

Natural food—food from the vegetable kingdom as grown under natural conditions, the seeds, the leaves, and the fruits—is *just as important and fundamental to life* and its *normal* function as natural air, or natural water, or natural exercise, or natural sleep, but it is almost universally ignored *while* the patient is *under* the doctor's *care as well as before and after.*

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sick man, a sick brother, a fellow human being, and that he must treat him with all possible kindness and consideration. Moreover, it is the physician's duty by precept and example to encourage such consideration on the part of nurses, and must resist any tendency he may observe in them to make their work mechanical or routine. It is his duty to put forth his best efforts to help the patient from a social and economic point of view as well as a scientific; and he may not do his full duty by neglecting these considerations.

Physiology of the Sympathetic Nervous System in Relation to Certain Surgical Problems.—A. Forbes and S. Cobb, of Boston, stated that on the basis of a theory that a special function, designated "plastic tonus," in skeletal muscle depends on sympathetic nerve fibres, believed to innervate some of the muscle fibres, the operation of ramisection had been advocated for the relief of spastic paralysis. Testing the physiological basis of the theory had been tried by measuring decerebrate rigidity with spring balances in cats decerebrated at varying intervals after removal of the sympathetic innervation of the fore leg or hind leg on one side. The difference between the operated and unoperated sides was usually so slight compared with chance fluctuations of rigidity that no significant change can be ascribed to the operation. This fact, they said, together with the failure of the conception of a special plastic function to harmonize with the known properties of nerve and muscle, rendered unsound the physiological basis for this surgical procedure.

The Connotation of Constitutional Psychopathic Inferiority Without Psychosis—A Study of Five Hundred Diagnoses.—Dr. James H. Huddleson, of New York, said that twenty-one attributes, separately or in various combinations, were found to have conditioned the diagnosis in these cases. The most frequent were forms of emotional instability, seen in sixty-three and one half per cent. of case histories bearing this diagnosis. These and other psychopathic characteristics were necessarily shown to be fundamental traits, not acquired in later life, to justify the diagnosis. The latter was best understandable as a symptomatic, not a pathological, expression, the pathological basis for all such symptoms being too much in dispute. While the term criminalism may be occasionally employed to define a symptomatic group under the head of psychopathic inferiority, it so readily lends itself to construction as a pathological or quasipathological conception—not yet justified by generally accepted data—that it would better be omitted from a nomenclature of diseases.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

CHAIRMAN, DR. FRED WISE, OF NEW YORK.
SECRETARY, DR. JAMES H. MITCHELL, OF CHICAGO.

Bullous Ichthyosiform Erythroderma: Report of Two Cases.—Dr. William H. Goeckerman, of the Mayo Clinic, Rochester, Minnesota, reported two cases of bullous ichthyosiform erythroderma. The observation of these cases permitted of some plausible deductions relative to the developmental mechanism responsible for the production of bullæ in an ichthyotic skin. The first case especially seemed well adapted to demonstrate the possibility that these bullæ might be essentially, at least in some cases, the result of an abnormal sweat retention. The second case was especially striking because the eruption of bullæ was much retarded by x ray treatments.

The author's observation of these cases as to their clinical behavior, seemingly so similar and yet different in many respects, suggested to him that we were dealing with this entire group of socalled ichthyosiform erythroderma with varying degrees of developmental disturbance throughout the entire skin of such individuals, whether this could always be demonstrated histologically or not. This, he said, in combination with a careful review of the literature made him feel that all the various forms of ichthyosis and many other dyskeratosis were not different entities, but genetically the same disturbance. The difference, for instance, between a simple asteatosis and an ichthyosis congenita was one of degree only.

Critical Investigation of the Relation of the Endproducts of Protein Metabolism to Eczema and Kindred Disorders.—Dr. Jeffrey C. Michael, of Houston, Texas, said that the present investigation was undertaken to determine the value of the hypothesis that hyperuricemia was associated with, and probably was an etiological factor in many cases of eczema and pruritus cutaneous. This old hypothesis has received considerable support recently by the findings of Schamberg and Brown and others. The study was carried out in four ways: 1, blood chemical estimations; 2, intracutaneous injections; 3, intracutaneous injections plus comparative photodynamic tests and 4, intravenous injections of urate solutions. Most stress was laid on the uric acid. Urea and creatinin were added to complete the triad of protein endproducts. In all, approximately 120 persons have been tested, only two intravenous injections experiments have been performed, about half of whom were sufferers from eczema or pruritus cutaneous.

The results were essentially negative, and the conclusion reached that uric acid, urea, and creatinin play little, if any role, in the causation of these disorders.

Sporotrichosis, an Occupational Dermatosis.—Dr. Harry R. Foerster, of Milwaukee, Wis., said that sporotrichosis, an infectious granulomatous disease of worldwide distribution, has shown an endemic occurrence in certain parts of the temperate zone, particularly in the Mississippi river basin. He stated that it is a disease peculiar to outdoor workers most of the cases reported in the United States having occurred among farmers, horticulturists, and the like. Of 148 American cases reviewed, 111 showed primary involvement of the distal portion of an upper extremity, and most of the infections caused disability for work. Fourteen cases have been reported among employees of a Wisconsin tree nursery, of whom ten definitely acquired the infection from the barberry shrub. The latter shrub, having a distribution in nature similar to that of the sporothrix, is considered of importance as a host of the organism and as a possible disseminator of the disease. The occupational hazards and disabilities peculiar to sporotrichosis entitle it to consideration among occupational dermatoses.

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SECTION ON PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

CHAIRMAN, DR. MATTHIAS NICOLL, JR., OF ALBANY.
SECRETARY, DR. W. F. DRAPER, OF WASHINGTON, D. C.

The Sanitary Officer and County Health Work.—Dr. E. L. Bishop, of Nashville, Tenn., said he believed public health work to be essentially a thing of personal service, even though dealing principally with its problems upon a community basis; hence, to be most effective must be administered with the political unit of government as the unit of health organization. He discussed the "standard minimum" for whole time county health departments, which he said was possible for only a part of the population in certain states. Other solutions of the problem might begin with one or more elements of the full department. He discussed the possibilities and limitations of the sanitary officer and the possibilities of growth and expansion of a service thus begun. His summary and conclusions were of great practical value.

Protective Health Measures on the United States-Mexico Border.—Dr. J. W. Tappan, of El Paso, Tex., said that the difficulties in safeguarding the health of our southern border seem, at first sight, insurmountable. Extending as it does from the Pacific Ocean to the Gulf of Mexico, the border is sparsely settled for long distances and legalized ports of entry are far apart. There are sixteen such ports scattered along 3698 miles of border. Five of these have direct connection by rail with the interior of Mexico, while the others have more or less indirect communication with the interior, depending upon their nearness to, or remoteness from, railroads or other routes of travel. The national quarantine is concerned with the quarantinable diseases—cholera, yellow fever, plague, smallpox, typhus fever, leprosy and anthrax. The medical inspection of aliens, carried out by authority of the Immigration law, covers communicable and other diseases in the case of immigrants.

If certain communicable diseases are present on the border, even if such diseases are imported from Mexico, they should be dealt with as local problems. Local health authorities must be prepared for such contingencies and the best solution of border problems lies in complete cooperation between federal, state, county and municipal health authorities. Under such circumstances communicable diseases which, in spite of vigilance, may get into the United States, can hardly spread to a dangerous degree.

Relation of the Medical Practitioner to the Public Health Program.—Dr. G. S. Luckett, of Santa Fe, N. M., said that this subject is trite but needs constant reiteration. He cited examples from current experience and attitude of the American Medical Association, of the medical opposition or indifference to the modern health program which was not by any means universal, but important in effect upon progress and upon the public attitude toward medicine. He said that the causes of this opposition or indifference were: 1, lack of information and understanding on the part of the profession; 2, faults of the health program and of the workers themselves; 3, mercenary consideration of a few physicians; and that the effects of this opposition are: 1, to delay development of a modern program in some parts of the country; 2, to arouse public resentment toward the profession and suspicion of its motives. The speaker suggested that this may react to encourage cults, and that the public is fairly "sold" to a preventive program. Among the solutions he suggested were: 1, modernization of courses in preventive medicine and hygiene in medical schools; 2, greater wisdom in public health policies—sound judgment in planning and executing, spirit of cooperation with profession, better presentation to profession of plans and results; 3, recognition by profession of preventive medicine as part of its field, e. g., periodic health examinations; 4, leadership on part of profession in development of an all comprehensive program of preventive and curative medicine for all of the people, before initiative is seized by non-medical groups and forced on physicians. The author further stated that health workers are neither responsible for the latter trend, nor desirous of it, but are powerless to stem the tide alone.

SECTION ON UROLOGY

CHAIRMAN, DR. B. A. THOMAS, OF PHILADELPHIA
SECRETARY, DR. GEORGE GILBERT SMITH, OF BOSTON.

Cystometric Determination of Bladder Pressure.—Dr. D. K. Rose, of St. Louis, said the instrument called a cystometer recorded the amount of fluid flowing into a bladder either through a cystoscope or a catheter from the first c. c. to full capacity and simultaneously recorded in mm. of mercury the changing pressure within the bladder. Based upon a study of innervation of the bladder, curves were plotted between c. c. of fluid and mm. of mercury, which indicated the type of lesion of the spinal cord. Furthermore, the condition of the bladder wall itself was shown to be either hypertonic or atonic. The threshold of sensation was also recorded indicating the state of irritability together with the bladder wall tone. It was possible by means of the cystometer to supplement cystoscopic data in all types of urological cases. The paper was accompanied by a presentation of the instrument and a lantern demonstration.

Prognosis with Chronic Pyelonephritis.—Dr. W. F. Braasch and Dr. E. P. Cathcart, of the Mayo Clinic, Rochester, Minnesota, presented a review of three hundred cases of chronic pyelonephritis treated ten years or more ago and five hundred cases treated from five to ten years ago. They compared the various methods of treatment, described the cases requiring surgical treatment, the course of the disease when not treated, the significance of hematuria with pyelonephritis, and the type of pathology causing unfavorable prognosis.

Stricture of the Female Urethra.—Dr. Winfield Scott Pugh, of New York, said that the archives of medicine held scant but rather interesting comments on stricture of the female urethra. It was mentioned at least as a possibility by Fabricus in the early days of the anatomical school of Padua; the first real description was that of Lisfranc in 1824. It was apparently and routinely taught and generally accepted that stricture of the female urethra was rather a rare entity. This was never convincing, and when the author first began his original

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studies over 3,000 gynecological and urological records were examined in this country and abroad. It was found that only four cases were definitely diagnosed as urethral stricture of the female. These were all cases that were readily diagnosed, one a carcinoma, one obstetric tear into the urethra and three cases of marked gonorrheal infiltrations. Other extensive reviews have been made, with practically no further results. In discussing the cause of this condition, many medical writers seem to have ventured quite far afield, while the real factor was among the best known offenders. It was believed that trauma was important, birth injuries, catheter injuries and other accidents. Neoplastic pathology was drawn on extensively. Two new growths were particularly mentioned, caruncle and papilloma, and in the late eighties members of the London Obstetrical Society were impressed by the relatively frequent occurrence of lupus and lupetic ulceration in these cases.

Syphilis was also mentioned as a possible cause. The author stated that practically all of the socalled etiological elements sink into oblivion when compared with the gonococcus. Embryological conditions may produce factors, which to say the least, predisposed to urethral obstruction, but one cannot escape from the impression that the doubtful cases were Neisserian infections. The author now discussed the pathology and symptoms of the infection, and said that stricture of the urethra in women was common, and that the principal cause was a gonococcus infection. The pathology was quite similar to that of the urethral stricture in the male. Its most common location was at the external meatus, and the most common symptoms were frequency, urgency and dysuria. He said the diagnosis may always be established by olivary tip or bulbous bougie; the prognosis was good in soft infiltrations, while that of dense strictures was doubtful. Treatment was by gentle dilatation, operative procedures to be avoided, if possible, as the female urethra was a delicate and very sensitive organ. Rapid dilatation should not be attempted in order to avoid severe hemorrhage. Gradual dilatation was always best, and should begin with the largest sound or bougie that will pass the stricture.

Bilateral Pyeloureterograms.—Dr. Abraham Mattes, of New Orleans, La., said that due to the fact that fatalities have been reported following the injection of fluid into kidney pelvis, and that harmful reactions have resulted from its employment in other cases, a number of urologists discontinued the taking of bilateral pyelograms. It was due to the work of those who still feel that there was danger attending the injection of the pelvis, that unilateral pyelograms were still in vogue. In fully twenty-five per cent. of the cases, unless a bilateral pyelogram was taken, or a picture of the opposite side taken later, the diagnosis will be faulty or incomplete. Bilateral pyelograms should be employed in each and every case.

The author said that the pelvis was a flat sac, its capacity always less than three c.c. and usually one to two c.c. It should be visualized as a flat sac in our pyelograms. Since the injection of one to two c.c. above its capacity did not enlarge the shadow, but only increased its density, the use of larger amounts was unnecessary. Larger amounts than three to four c.c. dilated the pelvis and gave an untrue picture, increased the tendency to discomfort and other symptoms. The emptying time of the pelvis was from three to five minutes, therefore pyelograms should be made always bearing in mind the physiological activity of the pelvis and ureter. A method that would cast a shadow of the functioning pelvis and ureter in as short a period of time as possible, and that did not interfere with its function, was the physiological one and should be employed. Briefly it was as follows:

Essentials: 1, the lack of preparation of the patient; the use of small opaque ureteral catheters; 3, the instillation of small amounts of fluid; and 4, the use of higher percentage solutions, as forty per cent. sodium iodide.

Method: Four or more pictures were usually taken. The first showed the course of the catheters. The second plate followed the injection of each pelvis with from three to four c.c. of fluid. The third picture was taken following the simultaneous injection and complete withdrawal of the catheters, one to three c.c. solution was used to each side. The fourth picture was taken in five minutes, and later others if indicated.

Summary: In over 1200 cystoscopies since January 1924, bilateral pyelograms were made in over 229 cases with no attending fatality, or any real serious complications when small amounts of fluid were used. In forty cases forty per cent. sodium iodide was used with no increase in symptoms usually noted. The flat sac method of instillation was physiological and did not distend the pelvis, nor interfere with its function. The capacity of the pelvis was one to two and a half cubic centimetres, rarely three cubic centimetres. The emptying time of the pelvis was three to five minutes.

The author said that time pictures gave valuable information that would otherwise be lost. In conclusion, he remarked that 1, bilateral pyelograms properly made were safe and were attended with no danger to the patient; 2, the pelvic sac should not be distended; 3, the physiological function of the pelvis and ureter should not be disturbed in any examination, or the interpretation of findings would be false; 4, a mild degree of stasis could always be determined by time pictures; 5, the taking of time pictures may eliminate the use of bougies for the determination of the presence of stricture or spasm in the ureter; 6, pain referable to the kidney area frequently showed, on examination, no more than retension of pyelographic media; and 7, socalled pelvic stasis responded to drainage and dilatation, with cessation of symptoms.

SECTION ON GASTROENTEROLOGY AND PROCTOLOGY

CHAIRMAN, DR. SIDNEY K. SIMON, OF NEW ORLEANS.
SECRETARY, DR. FRANK SMITHIES, OF CHICAGO.

Value of the String Test in Cases of Gastric and Duodenal Ulcer.—Dr. Jacob E. Meengs, of Grand Rapids, Mich., in a comprehensive paper on this subject said that the extensive use of the string test prompted a presentation of its relative merits as a routine test in ulcer cases. He described the technic

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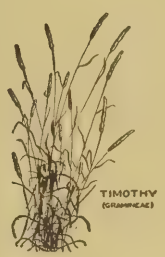

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of giving the string test and the interpretation of its findings, and discussed the cases which were x rayed previous to giving the string test. The x ray and string test were considered as respective aides to one another. Adverse criticisms of the string test were discussed, also the findings in normal individuals. The author closed his paper with a resumé of string test findings in positive and negative cases.

Clinical Variations in Negro Proctology, the Venereal Factor.—Dr. Curtice Rosser, of Dallas, said that two controlling factors accounted for a very large group of anorectal cases in the negro race. The first factor, the fibroplastic diathesis, was discussed in a contribution before the section two years ago. The second factor was responsible for considerable general pathology in the race—the incidence of venereal disease of every variety. Among the anorectal lesions seen in dispensary proctology among negroes primary and tertiary were lues, gonorrheal proctitis and anal chancroid. Incidence and methods of recognition were described, with a description of lesions and treatment.

The Clinical Effects of Abnormalities in the Portal Circulation on the Gastrointestinal Tract.—Dr. J. F. Montague, of New York, said that the clinical effects of deviations from normal portal circulation were not completely appreciated seems evidenced by the fact that certain gastrointestinal ailments were as yet but vaguely understood. As such may be mentioned mucous colitis, intestinal indigestion, flatulence, stasis, constipation and hemorrhoids. Indeed, not infrequently the latter condition was considered the chief or only clinical effect of portal plethora. That this view was erroneous Montague believed might be found in a study of the hemodynamic factors of the portal system. Such a study would also afford an explanation of the other conditions mentioned.

Treatment of Hemorrhoids.—Dr. J. Rawson Pennington, of Chicago, Ill., said that some years ago he made a new classification of hemorrhoids into —infective and noninfective; based, of course, on the relative virulence of the infection in the pile tumor. Since all examples were either infective, or potentially so, it was essential that the focus be extirpated. A slide was shown from the stump of a former hemorrhoidectomy done by one of the "closed" methods; bacteria and a round cell infiltration could be seen in the field. This patient was supposed to have "gastric ulcer," and was due for a gastroenterostomy, but the gastric symptoms promptly subsided after removal of the pathological condition, and free drainage was provided. A crater like opening was to be seen in the apex of the field, evidently Nature's mode of permitting the excess products of infection to escape. The same must hold good for other "closed" operations when the infection was virulent enough, or of the type to need such a vent, and the author said he was told by fellow surgeons that the scar after clamp and cautery operations frequently opens.

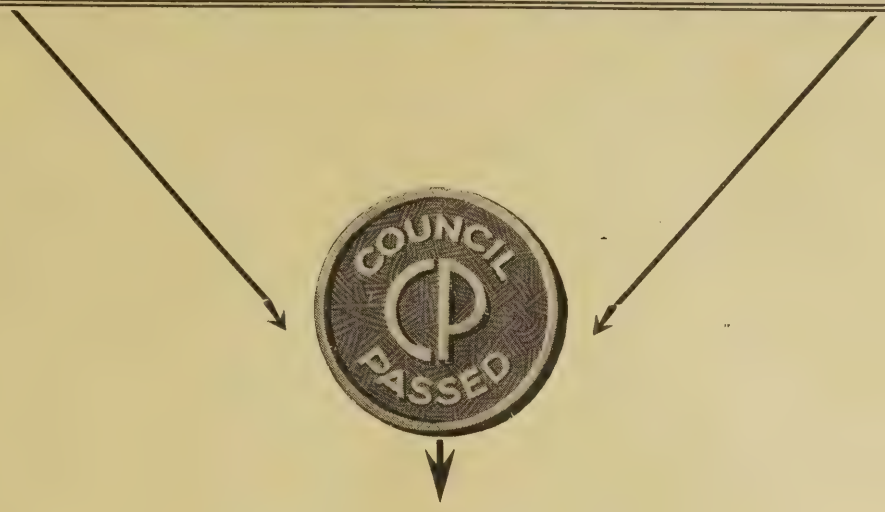
If the infection be of low grade or only of the toxemia producing type, such infected base may continue to smolder, giving off toxins, which passed into —and continuously poisoned—the system, occasionally with dire results, the same as from an infected tooth or tonsil. (It was passing strange, he said, that focal infection from the rectum and anus is seldom or never alluded to in the myriads of articles on this subject of late years. For a long time the author has insisted that the lower bowel was nearly as frequent a site of the foci as the opposite end of the gastrointestinal canal.)

Total removal of the infected base and good drainage was very essential. Simply removing the top of the mass, sealing in the infected base, and leaving Nature to open the eschar for escape of the infection, was certainly not good surgery. Hence twenty-six years ago, after a thorough trial of the ligature and the clamp and cautery methods, the author devised his "open" operation, by total excision, which has given complete satisfaction after use in several thousand patients. The unsatisfactory results met with after other plans such as severe pain (especially during defecation), loss of control, stricture, abscesses, fistulæ, exuberant cicatrices, ectropion, recurrences, etc., have one and all been notably absent. Moreover, the stay in hospital instead of being one to three weeks, was reduced to one to three days.

The author's second choice was the injection plan or its analogue—electrolysis.

Spastic Esophagus and Mucous Colitis: Studies of the Etiology and the Treatment by Progressive Relaxation.—Dr. Edmund Jacobson, of Chicago, said that laboratory investigations made at the University of Chicago have given evidence that mental and emotional activity may take part in the production and maintainance of esophageal spasm, at least of the mild type. Other experiments have shown a relationship between mental activity and contraction of skeletal muscles, for with advancing muscular relaxation mental and emotional activity dwindle or cease. It has been shown also that during extreme muscular relaxation the reaction of an individual to a painful electric shock applied to the finger tips tends to be diminished both subjectively and objectively. Not relaxation in the usual popular sense was meant, but an extreme form that required months to cultivate. These experiments have led the way to the development of a method called progressive relaxation, which has been shown to diminish central nervous activity as tested by the flexion reflex and other reflexes. In practice this method is tested by the diminution of the kneejerk during advanced relaxation. It has been shown that by this method at least one type of alimentary spasm, esophagus, may be diminished in a number of individuals. This method apparently acts through the reduction of reflexes of skeletal musculature thereby bringing with it a corresponding reduction of proprioceptive impulses and of reflex stimulation of the alimentary tract. Clinical observations now suggest that this method may be successfully applied to the treatment of mucous colitis.

Calcium, Carbon Dioxide and Chloride Content of Venous Blood in Cases of Gastric Ulcer Treated with Alkalis.—Dr. Sara M. Jordan, of Boston, reviewed briefly the literature on acid base balance and alkalemia, and referred to the normal variations in the acid base balance. The occurrence of alkalemia in a small percentage of gastroduodenal ulcer cases treated by the Sippy method was noted. The author said that fifty cases of gastroduodenal



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ulcer were studied with reference to the content of calcium, chloride and carbon dioxide in the venous blood during the first three weeks of treatment by the Sippy method. A few observations were made during the subsequent months while patients were still under treatment. These results were compared with ten normal cases studied for a period of three weeks. It was concluded that the variation was greater in those cases treated with alkalis than in normal cases without alkalis. The maximum levels for calcium and carbon dioxide were higher. Three cases showing alkalemia were discussed.

Chronic Ulcerative Colitis.—Dr. Louis A. Buie, of Rochester, Minn., spoke of the appearance of the rectal and sigmoidal mucous membrane in chronic ulcerative colitis, as seen through the sigmoidoscope. He said the impressions were based on examinations made of 473 patients. Pathologically the disease was divided into an active and quiescent period. The former was divided into four distinct stages: 1, period of hyperemia usually seen during the acute onset and in which the mucous membrane was diffusely inflamed and bled on the slightest trauma; 2, edema in the hyperemic mucous membrane which smoothed out the folds chiefly in the sigmoid and appeared as a boggy thickened and inflamed mucosa; 3, miliary abscesses appeared in the hyperemic and edematous mucous membrane; these abscesses averaged about 1 mm. in diameter and were not identical with the lymph follicles, and 4, rupture of abscesses leaving miliary ulcers with yellow bases containing, almost in pure culture, a lancet shaped diplococcus (discovered by Bargen) and which was in all probability a specific cause of the disease.

After the stage of miliary ulcers a tendency toward remission was manifested and was characterized by gradual disappearance of hyperemia and edema and a lessening of the tendency to bleed on trauma. The final stage of remission was reached when the mucous membrane was glazed and pitted with punctate scars. After successive attacks a characteristic contraction of the lumen of the bowel appears.

SECTION ON RADIOLOGY

CHAIRMAN, DR. A. C. CHRISTIE, OF WASHINGTON.
SECRETARY, DR. W. J. HUBENY, OF CHICAGO.

Osteochondritis or Epiphysitis.—Dr. A. C. Christie, of Washington, D. C., in his chairman's address reviewed our knowledge of the pathological condition which had been variously named osteochondritis, epiphysitis, and osteochondropathy, and which in special regions of the body had been given many descriptive designations, or had been named after its discoverer or discoverers. The paper opened with a brief description of the anatomy of the epiphyses and a consideration of the etiology of epiphysitis, and was followed by a consideration of the following pathological conditions, all of which are now classified under the general head of osteochondritis or epiphysitis: 1, osteochondritis deformans juvenilis coxæ (Legg-Calvé-Perthes's disease); 2, Osgood-Schlatter's disease of the adolescent tibial tubercle; 3, Köhler's disease of the tarsal scaphoid; 4, Köhler's disease of the second metatarsus; 5, vertebral epiphysitis; 6, epiphysitis of the os calcis; 7, osteochondritis dissecans of König.

Pathological Changes in Lung Tissue as the Result of Foreign Bodies of Long Sojourn.—Dr. W. F. Manges, of Philadelphia, said that the length of sojourn of a foreign body in lung tissue varied from a number of weeks to many years. There was a remarkable variation in the reaction to the presence of foreign body on the part of the lung, both as to time of onset of such reaction and as to the severity and extent of it. The changes in the lung tissue were mostly the result of infection. The foreign body not only interfered with drainage but also prevented healing or the natural control of infection. The end results were fibrosis, cavitation, bronchiectasis, pleuritis, pneumothorax, empyema, intermittent hemorrhages, fistulæ, malignant degeneration. The lesions were distal to the location of the foreign body. Many cases were mistaken for tuberculosis and treated as such. It was remarkable, he said, how infrequently tuberculosis developed. From the character of the changes seen in positive foreign body cases, he believed that many of the cases of bronchiectasis and similar chronic changes were of foreign body origin, the foreign body being of the nonopaque variety, and should be treated as such. Long forgotten facts in the history were often brought to light after diagnosis by röntgen rays. Bronchoscopic insufflation of bismuth or iodized oil was of the utmost value in helping to make x ray studies precise in result. The paper was accompanied by lantern slide illustrations.

New Position for Making Radiographs of the Mastoid.—Dr. Amédee Granger, of New Orleans, La., said that he had worked out this position to replace the one recommended by Arcelin, which was found difficult and tedious to use and which cannot be used at all with infants, unruly children, the very old, the very weak, or the septic and those who have short thick necks. Like the Arcelin it keeps the weight of the head off the ear, and mastoid region, and radiographs made with it are practically identical in appearance with those made in the Arcelin position. They show clearly and without superimposed shadows the superior semicircular canal, the course of the internal and external auditory canals and the periantral, zygomatic and tip cells. The three groups of cells can be quite satisfactorily differentiated. Like the low position, it can be used with all patients except infants and unruly children, and it is more comfortable to them.

X Ray Studies of the Appendix, Cecum and Ascending Colon.—Dr. Benjamin H. Orndorff, of Chicago, said that the appendix and first portions of the colon were frequently the seat of important pathology which was not distinctly inflammatory in character. The significance of a pathological appendix, a fixed cecum and ascending colon seemed not to be generally appreciated. In addition to a consideration of the history, physical and laboratory findings, the investigation must determine also, location, fixation, mobility, position, size of the lumen, filling defects, capacity for filling and emptying, and tenderness to palpation. The detection of these findings was scarcely possible without the aid of the x rays. The technic of such examinations was greatly facilitated by certain methods and apparatus which were illustrated.

Historical Medicine

Medical Notes from Swift's "Journal"

LOUIS J. BRAGMAN, M.D.
Syracuse, N. Y.

Jonathan Swift, born in Dublin in 1667, will always be remembered for his classical lampoon, *Gulliver's Travels.* Among the other important works of this critic, reformer, and pamphleteer are *The Tale of a Tub,* which has been designated the wildest and wittiest satire of the eighteenth century; and *The Modest Proposal,* in which is offered the mild suggestion that the people of Ireland, in order to relieve themselves of their dreadful poverty, should sell their children as food to the rich.

His *Journal to Stella* consists of an intimate, Pepysian series of sixty-five letters to Esther Johnson, a lifelong friend. Scattered throughout the running comments on people with whom he came in contact are found some random references to the medical profession of the day. The period covered by the letters is from 1710 to 1713.

He dined on one occasion, he relates, with Dr. William Cockburn, a Scotchman born in 1669, who invented an electuary for the cure of fluxes. This shrewd physician, who had been stigmatized "an old, very rich quack," wrote, in 1729, a biting sketch called *The Danger of Improving Physick,* as a direct jibe against the academicians who envied him the fortune he had made.

The "kindly Arbuthnot, the Queen's physician," was an intimate and constant friend of Swift. A Fellow of the Royal College of Physicians, and its Harveian orator in 1727, John Arbuthnot was distinguished no less for his literary attainments than for his scientific works. Swift introduces him on several occasions:

"Arbuthnot made us all melancholy, by some symptoms of bloody u(rin)e: he expects a cruel fit of the stone in twelve hours; he says he is never mistaken, and he appears like a man that was to be racked tomorrow."

Another time he wrote: "Arbuthnot says he hopes my strained thumb is not the gout; for he has often found people so mistaken."

An invitation was extended him to dine with Sir William Read, a popular quack who had advertised largely in the *Tatler,* and who had been satirized in number 547 of the *Spectator.* Addison here ridicules the fact that the patients of this "eminent physician" were solicited to announce "the several distempers under which they laboured," and the cures which resulted, in "public prints."

Read was nevertheless knighted in 1705, for his services in treating gratis many seamen and sailors for blindness, and was later appointed Oculist to the Queen. After his death in 1715, his wife continued his practice.

Swift was well acquainted with Dr. Samuel Garth, best known for his satirical poem, "The Dispensary," written in 1669; and with Charles Barnard, Seargeant-Surgeon to the Queen, and Master of the Barber-Surgeon's Company. He dined several times with Dr. Hugh Chamberlen, the younger, a Fellow of the College of Physicians and Surgeons, and one of its censors for a number of years.

John Radcliffe, a well known physician and wit, who was denounced as a too clever empiric, treated him in 1711 for his attacks of dizziness. Others to receive mention are Dr. John Feind, physician to the Queen during the reign of George II; and Thomas Lawrence, First Physician to Queen Anne, and Physician-General to the Army.

In addition to these brief notes on members of the medical profession, the *Journal* contains an occasional witticism of pertinent interest. For example, in speaking of an affliction which had attacked the Lord Treasurer, Swift humorously remarked:

"He has had an ugly return of the gravel. 'Tis good for us to live in gravel (referring to the Kensington Gravel Pits, a very famous health resort), but not for gravel to live in us; a man in this case should leave no stone unturned."

Punning, even as now, was then a popular form of amusement:

"I'll tell you a good pun. A fellow hard by pretends to cure agues, and has set out a sign, and spells it *egoes;* a gentleman and I observing it, he said, 'How does that fellow pretend to cure agues?' I said I did not know, but I was sure it was not by a *spell.*"

There are numerous bits of gossip pertaining to the various ailments and accidents and operations which befell his many acquaintances, but they are worded unfortunately in the form of curt conversation and small talk, and hence must lose their significance unless read in the Journal itself. However, in reference to one condition, and that of which he himself was the victim, he has submitted a very satisfactory and complete clinical history. On March 28, 1712, he wrote:

"I have a pain these two days exactly upon the top of my left shoulder. I fear it is something rheumatic, it winches now and then. Shall I put flannel to it?"

The next day he was no better.

"I am plagued with these pains in my shoulder; I believe it is rheumatic. I am got into bed, and have put some old flannel, for want of new, to my shoulder, and rubbed it with Hungary water (a mixture of distilled water and rosemary flowers). You must know I hate pain, as the old woman said."

He follows with a minute description in his note on April 8th:

"All these days I have been extremely ill, though twice I crawled out a week ago; but am now recovering, though very weak. The pain increased with mighty violence in my left shoulder and collar-bone, and that side my neck. On Thursday morning ap-

peared great red spots in all those places where my pain was, and the violence of the pain was confined to my neck behind, a little on the left side; which was so violent that I had not a moment's ease, nor hardly a minute's sleep in three days and nights. The spots increased every day, and bred little pimples, which are now grown white, and full of corruption, though small. The red still continues, too, and most prodigious hot and inflamed. The disease is the shingles. I eat nothing but water gruel; and am very weak, but out of violent pain. The doctors say it would have ended in some violent disease if it had not come out thus. I shall now recover fast. I have been in no danger of life, but miserable torture."

But throughout the month of April he was no better. The spots became inflamed, and then very irritable, and finally ran into three or four large sores resembling blisters. Even in May he was still enduring some pain in the shoulder:

"I keep a flannel on it, and rub it with brandy, and take a nasty diet drink. I still itch terribly, and have some few pimples; I am weak and sweat; but I think my pain lessens. The doctors said they never saw anything so odd of the kind; they were not properly shingles, but *herpes miliaris,* and twenty other hard names."

It was not until July, four months from the onset, that he felt he had fully recovered from the effects of the ailment.

Scattered throughout the *Journal* are references to spells of giddiness which periodically attacked him. In addition he suffered at various times from deafness, impaired vision, muscular twitchings, and paralysis of the muscles of the right side of his mouth. He received the stigma, for the singularity of his actions, and the violence of his temper, of "the mad parson." It is related further that on observing an elm that had been blasted by lightning lying along the roadside, he remarked:

"I shall be like that tree, I shall die at the top."

This prediction ultimately came true, for in 1738 he developed signs of acute mania, necessitating constant supervision. After a long period of apathy he died in October, 1748.

It is supposed that he refrained from marrying the Stella of his *Journal* because the insanity of a paternal uncle and his own significant symptoms led him to be fearful of perpetuating a neurotic strain. That mental problems were uppermost in his thoughts is further evidenced in his selfcomposed obituary poem, "On the Death of Dr. Swift," which relates that:

"He gave the little wealth he had
To build a house for fools and mad;
And showed by one satiric touch
No nation needed it so much."

Medicine According to the Talmud

SOLOMON R. KAGAN, M.D.
Springfield, Mass.

(*Concluded from page* 461)

The Talmudic physicians, recognizing the importance of the digestibility of food, urged regulation of the meals and proper amounts of food (64).

Many Talmudic statements were devoted either to prevention of disease or to increasing body resistance to conquer the causative factors of many maladies. The Talmudist regarded constant dry climate and mineral springs as beneficial to health. The damp ground was improved by means of planting certain "Tossio" (65). Hot baths were recommended for the double purpose of drinking and bathing. Cold and warm baths were considered by some of the Talmudists as remedial measures of utmost importance. These baths according to the Talmud caused not only relief of pain in inflammation by producing contraction of the bloodvessels, but also are of great value as a tonic stimulant in increasing the power of resistance of the organ. They recognized the local use of washing the hands and feet for its influencing of deeply seated organs and as a therapeutic agent of great practical value (66). They proposed to apply alternate temperatures for the purpose of increasing the tone of the system and stimulating the vital centres to increased activity, and to prevent the person from the tendency of "catching cold." They also taught that a hot bath should be followed by a cold shower: this is likened unto heated iron being allowed to cool in order to lend strength to the metal (67).

Hydrotherapy was highly recommended as a preventative and a curative. Cold water sponging in the summer and winter is of benefit to the stomach (68). Rabbi Chanina recommended frequent bathing followed by a rubdown of balsam as a tonic and sedative to the body. Since he applied this rule to himself, in spite of his eighty years, he felt strong, healthy and vigorous (69). "Warm baths are of greater importance than medications" (70).

It is known that in certain diseases an incision of a bloodvessel with the withdrawal of a certain amount of blood is indicated. In the Talmudic epoch the chemical composition of the blood was unknown. They did, however, suggest the presence of certain poisons in the blood, and for the purpose of the diminution of these poisons they also advised venesection or removal of blood in moderate quantities (71).

Running was regarded as harmful for the sight; climbing stairs harmful for the heart; but moderate physical exercise was considered beneficial (72). The Talmud advised everyone to learn to swim, and also to acquire a trade (73). The Talmud said: "Even if your wife has a hundred servants, she still ought to

do some work herself, for idleness is the downfall of all women, and leads to excesses and maladies" (74).

It is of interest to know that the Talmud had scientifically explained the physiology of menstruation, mostly in accordance with the views of the modern physiologists. The Talmud also discussed various questions of obstetrics. For about three decades a Vienna professor explained that formation of sex in the fetus depended on the pregnant woman's diet. The Talmud, however, explained this phenomenon in connection with the position of the ovum, i. e., the place where the ovum became implanted (75). The Talmudists believed that the diet of a pregnant woman had an influence upon the strength, character, and complexion of the child (76).

Being aware of the importance of a sound body for a healthy soul, the Talmudists laid down the following hygienic rules:

Sudden changes in temperature are decidedly harmful, and the cause of many diseases (77). A cold drink in a heated state is dangerous. Sleeping on the floor or in damp places is harmful (78). The sunshine is a real remedy (79). The patient feels better in the morning due to the sunshine (80). Exercise is of greatest value for the health (81). Rav said to his sons: "Do not take medicine; do not jump; do not extract teeth; and do not annoy the snake" (82). Marriage was advised at the age of eighteen years (83). "The eye is like a princess and it hurts here to be touched by a hand that has not been washed three times," said Rabbi Nathan. Bathing the eye in cold water in the morning and bathing the hands and feet in warm water at night are the best medicines for the eyes," said Samuel (84).

The rabbis taught: "One may wash his body in the waters of Gror and Tiberias, but it is not allowed to bathe oneself in water used for floating flax." "One should always endeavor to seek a dwelling in a city of recent settlement" (85). The impure air of large cities is harmful to the health (86).

GENERAL TREATMENT ACCORDING TO THE TALMUD

The methods of treatment practised by the Talmud bear the seal of the old epoch. Some of these, however, are practised moderately at the present time. The Talmud said: "The door which is closed for God's deeds is open for the physicians" (87). Therefore the Talmudists advised praying to God for recovery (88). The rabbis and sages prayed for the cure of patients (89). However, they also had confidence in medicine. The physician was permitted by God to treat all diseases (90). In emergency cases they were allowed to cure even on the Sabbath (91).

The Talmudist believed that hygienic measures should take first place in the method of treatment. In this connection they attribute to drugs a very secondary rôle, paying particular attention to diet and regular environment of life. The methods of treatment practised by the Talmudists were partly by the administration of certain drugs, and partly by the use of remedial measures other than drugs, as foods for the sick, climatic treatment, cold sponging, counterirritation, heat, inhalation, drawing of blood, mineral springs and rest cures (92).

The Talmud prescribed many drugs (herbs and minerals) for therapeutic purposes. But the nomenclature of the drugs at the time was so different from that of the present time that it is difficult to decide which drugs of the present pharmacopœia they applied then. Besides, the pharmaceutical preparations were not strictly correct by weight and measures, but they ordered approximately in general forms, not designating the dose. Therefore, the remedial measures other than drugs prescribed in the Talmud are of more practical and scientific value.

Many methods of treatment which are the achievements of modern medicine, discovered by long experiments, laboratory investigation and research, were briefly discussed two thousand years ago by the investigating spirit of the Talmudists on the grounds of hypothesis and logical judgment. A few examples of methods of treatment according to the Talmud are given here:

Since stomach troubles have been the greatest bane of mankind the Talmud laid much stress on the care of the bowels. They paid particular attention to diet and physiology of peristalsis. The Talmudists, discussing the causes of the troubles of the digestive system, agree that it is due to a number of causes, the most common of which is sedentary life, laziness, overeating and overdrinking. In this connection, they advised the consuming of easily digested food; eggs must be eaten soft boiled; vegetables and fruits should be eaten freely; plenty of water during meals and systematic massages regularly applied (93).

For constipation, the Talmud advised the free use of vegetables, lettuce, and radishes in summer as well as winter, because the radishes churn the food in the stomach; lettuces overturn it and cucumbers extend the gut (94).

They also used a composition of certain herbs as a purgative. The latter was recommended not to be given to a pregnant woman as it was dangerous (95).

To relieve the stomach pain the rabbis advised: "One may warm a sponging cloth and put it upon his stomach, but he must not do so with a boiling hot vessel, for this is dangerous" (96).

Rabbi Chanina advised carshun for relief of pains in the stomach (97). The Talmudists suggested a remedy *Coss Ickrin* for icterus (98).

The Talmudists used a grain of pepper or cinnamon to take away any bad odor of the breath (99). A grain of salt or the eggs of grasshoppers were regarded as remedies for toothache (100).

As a preventive and curative measure for neurasthenia the Talmud proposed cold baths and mineral waters for both drinking and bathing (101).

Psychopathia (and disease of the mind) was treated by suggestion and hypnotism (102). For the cure of nosophobia (an exaggerated fear of disease) concentration of the patient's mind on prayer of faith and on science in order to attract his imagination was recommended. "If you suffer from headaches study the Torah," said the Talmud (103).

The Talmudists were familiar with the operation of extraction of the fetus through an incision made in the abdomen (104). It is also mentioned the operation for imperforate anus in the new born (105). They used to freshen up the border of old wounds in order that union might be effected (106). Extirpation of the spleen was successfully performed (107). They used artificial teeth made of hard wood,

bone, gold and silver (108). They used to wear tunics over their dresses during an operation (109). In major operations the patient was given an anesthetic (110). Venesection was produced as a therapeutic and preventive measure by means of leeches or cupping. After the operation of venesection a dietetic regime was prescribed (111). Many surgical diseases such as fractures, dislocations, etc., are discussed in the Talmud (112).

As a remedy for heart trouble the Talmudists prescribed an ointment prepared of cumin, soap, mint (fern), wormwood, cedarblossom and hyssop. All these were to be dissolved in wine. The same dissolved in beer was useful against pain in the uterus. The same dissolved in water was of benefit for gas in the stomach (113). For bronchitis and heart pains they recommended that one drink warm goat milk every morning (114).

Samuel treated eye maladies by drops, ointments, and cold applications (115). It was allowed to cure on Sabbath eye diseases if there was danger of losing one's eye, because the optic nerves are dependent on the heart (116). It was also allowed to treat on Sabbath a secreting eye, a wounded eye, an eye covered with blood, and an inflamed eye. The rabbis advised to bathe eyes and to apply human milk and white of an egg for preparation of a salve for a sore eye (117).

For earache, R. Johanan suggested the applying of loins. Rabbah said that all fluids are injurious to the ear, except the water from loins. Thus, take the kidney of a woolless sheep, cut it crosswise, place it on burning coals and collect the water that begins to flow from it. This water, when it is neither too cold nor to warm syringe into the ears. Or one may rub in the ears with the molten fat of a big chafer. The following is another good remedy for earache: fill the sick ear with olive oil and warm it, taking, of course, precautions against burning the patient. It must also be noted that for discharging ears the remedies must be dry, while for aching ears that do not secrete moist applications must be used (118). Other rabbis treat with an application of a certain cotton (119). Crutches and various other orthopedic appliances were known to the Talmud (120). They practised trephine and intubation of the larynx upon animals (121). In case of loss of substance of the cranium they used a plate for plastic operation. They used a certain instrument for the correction of prolapsus recti. They used to reposit the abdominal viscera by means of relaxing the abdominal muscles and by closing the wound with sutures (122). Intestinal parasites were expelled by urigo (123). In the treatment of overeating they applied ipecac (they called it ipectosin) to produce vomiting (124). They prescribed opium (they called it opiun) as analgesic and hypnotic. Large doses of them were considered dangerous (125). Most of the amputation or cauterization was made on the lower extremity (126). Sunstroke was treated by "trick" which was composed of a certain drug with snake's flesh (127). Rabbi Huna said: "If one swallowed a leech or bee drink some strong vinegar" (128). Samuel treated diseases according to homeopathy (129). The sting of a lizard they cured with warm medicines, that of a hornet with cold ones. Likewise warm medicine is recommendable for the pricks of thorns, and cold ones for chapped skin; to reverse is dangerous. A high temperature should be reduced by the application of radishes (130).

As a remedy for cough, Rabbi Papa advised to fill a new pitcher with water, put therein a spoonful of honey and a rue (plant) (131).

For the treatment of a carbuncle Rabbi Saphra suggested to put a rue with honey or radishes with strong wine upon it. While these remedies are being prepared, put meanwhile on the sore a white or red grape, according to whether the sore is white or red. Rabbah said: A tumor is a sure symptom of inflammation. He recommended to hit upon it with the fingers sixty times, then open it crosswise. If, however, the tumor had a white spot on the top, all this is not necessary, as then it was not dangerous (132).

In order to stop bleeding a prominent physician and rabbi Samuel, advised to apply cress dishes mixed with vinegar (133). Other rabbis recommended the application of cold water (134).

HOME REMEDIES ACCORDING TO THE TALMUD

It is known that some home remedies are used even at the present time, having been investigated and recognized by science as valuable. The Talmud, too, mentions some of the socalled home remedies which were taught to the masses and were known as popular remedies. The form and order of their use is characteristic of the old Talmudic epoch. The following medical directions recommended by the Talmud are an illustration of them:

Women may go out with a Kutana stone, to prevent miscarriage. The tooth of a live fox was recommended to prevent sleep, and that of a dead one to cause sleep; a nail from the gallows where a man was hanged is remedy for swelling (135).

Rabbi Judah said: "That Holy one has created nothing useless in the world. He created the snail as a remedy for a sore, the fly for the sting of a wasp, the mosquito for the bite of a serpent, the serpent for the mange, and the lizard for the bite of a scorpion" (136).

The following five are apt to strengthen one's memory: bread baked on coals, and particularly the consuming of the coals themselves, soft eggs without salt, the frequent drinking of olive oil, of wine flavored with spices, of water left after its use for a dough. According to others add this, the consuming of wheat bread. The following five objects are conducive to one's forgetting his studies: The eating of the remnants of the mice's or cat's food, of the heart of a cow, the frequent consuming of olives, the drinking of the water left from ones own washing, and finally, the bathing of one's feet one kept on the other. According to others, putting of one's clothes under one's head while sleeping (137).

Rabbi Assi advised for pain in the abdomen that seven red grains, usually found in the washhouse, be put in the linen collar of an old shirt which should be bound with a cord made of the hair of a cow; then immersed in white pitch and burn, the ashes thereof he should apply to the sore place and relief would follow. While the preparation of this was going on, he might apply seedless blackberries. This remedy, however, is effective only in case of external pains; for internal abdominal pains, grease the sore place with the molten fat of a goat that has not yet borne

any offspring, or burn three pumpkin leaves dried in the shade and apply the ashes; also almond worms or olive oil and wax may be applied, in summer on linen, in winter on cotton (138).

CONCLUSIONS

1. The medical instructions and directions of the Talmud are so positive and so concrete that it is quite evident that the Talmudic physicians were familiar with the manifestations and treatment of local and constitutional diseases. The medical knowledge and methods of treatment used by the Talmudists were based not only on hypotheses and traditions, but also on observation, dissection, and experiments upon animals.

2. The Talmud contains no medical treatises as such. The medical subject is discussed and stated as far as it has a connection with the problems of rites and ceremonies. It regards the hygiene as a God's deed, as a ritual action.

3. The Talmudic medical statements have a great value from an historical point of view, being guides to the development of this subject, its different stages and its construction. The general Talmudic therapeutic considerations are of interest to the history of medicine, showing that many old methods applied by the Talmudists were strikingly like those with which medical science is occupied at the present time.

The references will be included in the author's reprints.

Hints for the Cure of Squinting in Young Persons

(*Published in London in August, 1772*)

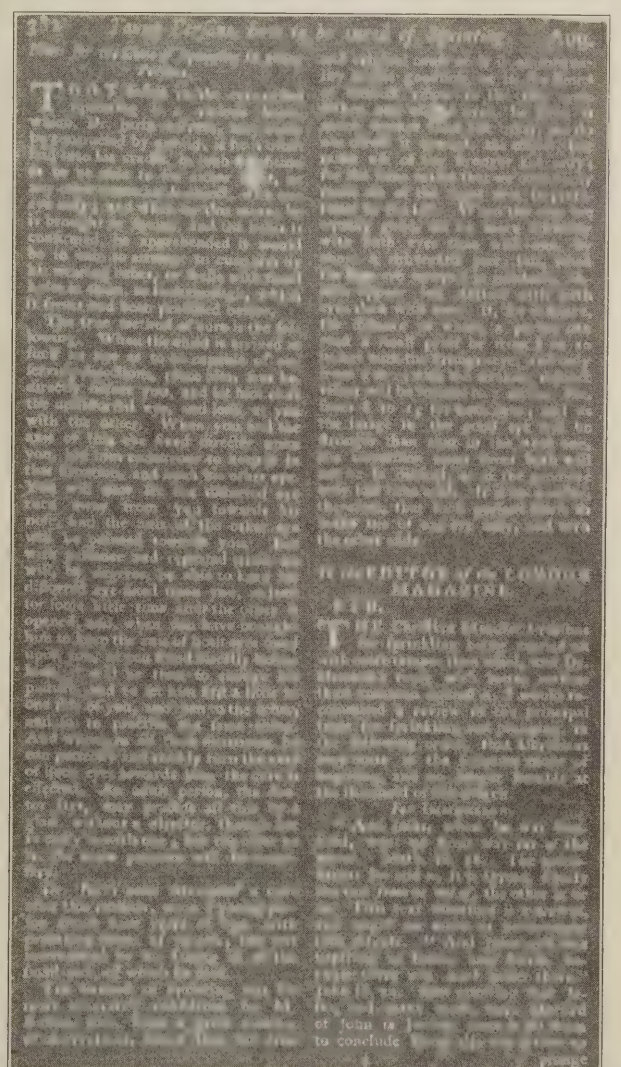
The following article on squinting appeared in *The London Magazine* or *Gentleman's Monthly Intelligencer* in August, 1772:

"That the defect in the eyes is a vicious habit, which, Dr. Jurin observes, may easily be contracted by a child, if he is often laid into his cradle, in such a position as to be able to see either light, or any other remarkable object, with one eye only; and when by this means he is brought to squint, and the habit is confirmed, he apprehended that it would be in vain to attempt to cure him by his wearing tubes, or shells with small holes in them, to look through, which it seems has been practised before.

"The true method of cure is the following. When a child is arrived at such an age as to be capable of observing directions, place him says he, directly before you, and let him close the undistorted eye, and look at you with the other. When you find the axis of this eye fixed directly upon you, bid him endeavour to keep it in that situation, and open his other eye. You will now see the distorted eye turned away from you towards his nose, and the axis of the other eye will be pointed towards you. But with patience and repeated trials, he will by degrees be able to keep his distorted eye fixed upon you, at least for some little time after the other is opened, and when you have brought him to keep the axis of both eyes fixed upon you, as you stand directly before him, it will be time to change his posture, and to set him first a little to one side of you, and then to the other, and so to practise the same thing. And when, in all these situations, he can perfectly and readily turn the axes of both eyes towards you, the cure is effected. An adult person, the doctor says, may practise all this by glass, without a director, though not so easily as with one; but the older he is the more patience will be necessary.

"Dr. Jurin once attempted a cure after this manner, upon a young person about nine years of age, with promising hopes of success; but was interrupted by his falling ill of the smallpox, of which he died.

"The business of squinting was far more accurately considered by M. Buffon, who, from a great number of observations, found that the true and original cause of it is an inequality in the goodness, or in the limits of distinct vision in the two eyes. When one



Photographic reproduction of page of the *London Magazine* on which this article originally appeared.

of the eyes, he says, is much weaker than the other, we do not direct it towards the object, but make use of the stronger eye only; for the same reason that we make use of the right arm in preference to the left.

"When the eyes are equally good, we see more distinctly with both eyes than with one, by about a thirteenth part; but, when the eyes are unequal in goodness, objects appear less distinct with both eyes than with one. If, for instance, a distance at which a person can read a small print be from eight to twenty inches with the stronger eye, and only eight to fifteen with the weaker, distinct vision will be limited seven inches, viz., from eight to fifteen for both eyes; and as an image in the good eye will be stronger than that in the weak one. The impression upon them both will not be so distinct, as if the good eye only had been used. It is no wonder, therefore, that such persons chuse to make use of one eye only, and turn the other aside."

Contributors to the Science of Medicine

Frederick Ruysch

Frederick Ruysch was a great anatomist and gave a new impulse to anatomical research. He was born at the Hague, March 23, 1638, his father being secretary of the States General of Holland. He studied at Leyden for the medical profession and displayed a particular predilection for anatomy. He took his doctor's degree in 1664, returned to the Hague, married and entered into practice. It was not long after his return that Holland had a visitation of the plague. It raged with the greatest fury, and young Ruysch was selected by the government to take charge of the cases which occurred at the Hague. He performed this service to the entire satisfaction of his fellow citizens.

The talents of Ruysch are said to have been developed by accident. To repel the audacious and calumnious aspersions with which Louis de Bils attacked de le Boe and Van Horne, relative to Ruysch's proposed method of preserving bodies from putrefaction, he published in 1665 and again in 1687 his tract on the valves of the lymphatics which completely established his character as an anatomist of originality and research. The publication of this work so increased his reputation that he was in the succeeding year invited to the chair of anatomy at Amsterdam. He now determined to devote his life to this special branch of medical study and human and comparative anatomy became the objects of his closest attention. The art of injecting, which had been attempted originally by Eustachius and Varoli, was afterwards rudely practised by Glisson, Bellini and Willis. Reginald de Graaf was perhaps the first to employ the syringe to aid researches into the anatomical structure of the human body. He injected the spermatic vessels with mercury and variously colored liquors. Swammerdam, however, carried the art to greater perfection as he, employing melted wax with other ingredients, made the first approach to the refinements of modern anatomy. It is said that Swammerdam imparted his knowledge to Ruysch upon quitting the paths of medicine for the mysteries and superstitions of Bourignon. Be this as it may, by improving upon the idea of using substances which though solid might be rendered fluid at the point of injection, Ruysch carried the art to the highest point of perfection. His success in the injection of the bloodvessels was such as fairly to warrant the epithet "marvelous" which was applied to them by those who witnessed the results of the process. The extreme branches were so well filled as to give to the dead body the freshness of youth and to imitate sleep rather than "sleep eternal," at least so says a French historian of the period.

A striking instance of the success of Ruysch in the preparation of dead bodies by injection is recorded in the case of the English Admiral Berkeley, who was killed in an action between the English and Dutch fleets on June 11, 1666. It is related that the body of the admiral was rapidly advancing to a state of putrefaction, and was therefore, by order of the States General, submitted to Ruysch for injection, to prevent further corruption. So well did he succeed in this, that the body came out of his hand looking fresh, was transmitted to England and the operator was rewarded handsomely for the exercise of his ingenious talent. A museum containing dead bodies treated with such superlative skill could not fail to attract widespread attention and it was visited by the learned from all parts of the world.

The Czar Peter, in his journey through Holland in 1698, spent many days in the museum of Ruysch, partook of his frugal fare, and in 1717 arranged for the purchase of the collection for the sum of thirty thousand florins, and consigned it to St. Petersburg. The tale also goes that the Czar was so delighted with the preparations, that he could not refrain from kissing a dead infant which seemed to smile upon him.

But Ruysch put his knowledge to the furtherance of the science of anatomy and to the advancement of his own fame. By the application of this happy device he was enabled to demonstrate the arrangement of minute vessels in the interior of organs which had escaped the scrutiny of former anatomists. Scarcely a part of the human body eluded the penetration of his syringe and, of course, his discoveries were proportionally great. His close description of the valves of the lymphatics, although he admits that they had been observed by other anatomists, of the vessels of the lungs, and their minute structure; his researches on the vascular structure of the skin, of the bones, of the epiphyses and their mode of growth and union; his observations on the spleen, the glans

penis, the clitoris, and the womb impregnated and otherwise, were but a comparatively small part of his anatomical labors. He investigated the minute structure of the brain, he demonstrated the organization of the choroid plexus, he decribed the state of the hair when affected with Polish plait; he proved the vascular structure of the teeth; he injected the dura mater, the pleura, the pericardium and peritoneum; he laid bare to the sight and described the minute structure of the conglomerate glands, he investigated that of the synovial apparatus situated in the interior of the joints and he discovered several curious particulars relating to the lacteals, the lymphatics, and the lymphatic glands. In short, Ruysch did yeoman service in the cause of anatomy and indeed put his remarkable knowledge of the art of injecting dead bodies and his skilful application of this knowledge to good use.

In 1691 he published *Observationum, Anatomico-Chirurgicarum Centuria,* to which he added a catalogue of the rarities in his collection. In 1710 the *Thesaurus Anatomicus,* also the *Thesaurus Animalium,* and between the years 1717 and 1723 his *Adversaria Anatomico Medico Chirurgica. The Epistola Anatomicæ* were published in several parts at different times. The whole of his works have been collected and published in five volumes with title of *Opera Omnia Anatomico Medico Chirurgica* in 1721 and 1735. He is said to have claimed the discovery of parts noticed previously by other observers and was therefore involved frequently in controversy.

Anatomy of Dr. Frederick Ruysch
By *Johan van Neck* (1683) (*Amsterdam Museum*) *Hanfstaengl, Munich*

In fact, among men of the medical profession, no name as a controversalist in anatomical matters has occurred so often as that of Ruysch. But nothing can detract from his reputation as an anatomist or from his fame as an anatomical discoverer and a correct reviser of other men's discoveries. His art as an injector gave him an immense advantage over other delvers of his time into the mysteries of anatomy, and of this unique expert knowledge he availed himself to the full.

He made a number of important discoveries concerning the structure of parts of the eye and ear. He was appointed professor of physics in 1685, which chair he filled for forty-three years, when from a fall in his chamber he fractured his thigh bone and was disabled from further work.

Ruysch was well known in foreign lands. He was elected a Fellow of the Royal Society of London and was the successor of the immortal Sir Isaac Newton in the Academy of Sciences of Paris. He was also a member of the Academy of St. Petersburgh. He died from fever on February 22, 1731, having reached the patriarchal age of ninety-three years. His illustrious contemporary anatomist, Morgagni, although of a later generation, died at the advanced age of ninety years.

Ruysch possessed the confidence of the ministers of his country. He was their forensic physician and also presided over the establishment for midwifery. Like Boerhaave, another contemporary but of a later generation, Ruysch paid much attention to botany and dissected plants with the same precision as bodies belonging to the animal kingdom. He filled the botanical chair and excelled Morgagni in that he published a book at the age of ninety. At eighty years of age he had vitality and enthusiasm enough to commence the formation of another museum to take the place of the one sold to Czar Peter, and moreover, he succeeded in his object and even made a catalogue of the collection.

It is said that no collection ever contained such specimens as the collections of Ruysch and that he had some means of preparing his specimens unknown to other anatomists not so highly perfected is obvious. His secret was buried with him and his son, Henry Ruysch, also a physician and the assistant of his father in the formation, died four years later and left the secret unrevealed.

Upon the death of Ruysch his museum was sold publicly and the King of Poland devoted twenty thousand florins to the purchase of a part which was at Wittenberg in the time of Haller.

The Oldest Medical Work in the World.—This is the Egyptian papyrus written by a Nile physician three thousand and five hundred years ago, detailing the methods to be pursued in dealing with fractured bones and head injuries. Forty-eight hypothetical cases are described by the ancient physician and treatment prescribed. Dr. James F. Breasted, the Egyptologist, said that the author showed a knowledge of brain functions which was not rediscovered until the present century. In the forty-eight prescriptions by this medical man, only once does he depart from science or common sense in favor of magic. The New York Historical Society has recently announced its plans for publishing this work.—*N. Y. Medical Week.*

Editorial Articles

SANITATION AND DOMESTIC HYGIENE

There are always two sides to a question and it is arguable, although the argument may be specious, to debate the point as to whether good sanitation and effective domestic and personal hygiene are wholly advantageous to the inhabitants of a country. Europe is overpopulated to some extent, and Great Britain certainly, because the death rate has been reduced and not on account of a reckless birth rate. Sanitation has abolished practically in civilized countries the epidemics which at one time decimated population and which now provide to some extent a safety valve for overcrowded Asia.

It seems that the progress of domestic and personal hygiene will curtail the mortality and invalidity which now arise from the chronic diseases and if so what will then happen to Europe. Great Britain affords a striking example of the manner in which the safeguarding of infant lives adds to a population which is already too great for the country to support properly. It is generally believed that owing to the fact that more than three quarters of the population of Great Britain live in towns that her death rate is high. On the contrary, the death rate of Great Britain is much the same as that of this country and not far behind that of her Dominions. This result is almost wholly due to her success in saving infant life. France has been regarded for years as the country which would not produce enough children. As a matter of fact there is very little difference between the birth rate of Great Britain and France; the reason why France's population is almost stationary is because her death rate is so much larger. In short, France's sanitary measures are less effective and domestic and personal hygiene and especially infant welfare are less considered.

Thus from her very care for human life Great Britain is overcrowded and in existing circumstances economically handicapped, while France from her lack of care for infant life can support her population easily, and from the economic viewpoint is in the better position.

There is anther aspect of the situation which is worthy of notice, that although the death rate of the urban population of Great Britain is low, it is not now the case of the survival of the fittest. The general physique of the inhabitants of British towns has deteriorated. The individual has benefited, but it is doubtful if it is to the good of the inhabitants at large that so many more children should survive than the country can adequately support. It may be predicted that a way will be found out of the difficulty and in the meantime domestic and personal hygiene will proceed apace, the menace of the chronic disease will be largely removed and in twenty or thirty years' time the span of life will be lengthened by five years or so.

MEDICAL EDUCATION

It is sometimes well to retrace our steps and make a fresh start along old lines, and such would seem to be the case in medical education. We sometimes get the cart before the horse in education, and it is usually advisable then to unhitch that animal and put him in his proper place.

We may profitably examine our whole artificial machinery of general education with reference to whether or not it educates, before making a similar investigation of methods of medical education in particular.

We have somehow become imbued with the idea that because a man has had a college course that he is, therefore, better educated and more fit to study medicine. Nothing is more likely to be untrue.

A local alumni society of one of our "greatest" universities recently invited its members to its periodical meeting, offering as its total bill of fare, besides "plenty to eat," music by a jazz band, selections by a darktown quartet, cinema pictures showing alma's athletic prowess and "strong smoking," whatever this latter may be. Such is the way we were "educated" to spend our precious leisure hours and that we may be "cultured" physicians after we have passed additionally through the medical mill with all its superfluities and repetitions.

The most important question to be answered before taking up the study of medicine or anything else is "Do we really like it, and feel we are fitted for it?" We were once told, in dead earnest, by an aspiring premedic that he knew that he was cut out to be a doctor because he always found pleasure in dissecting his sister's dolls. Doubtless that man is now a skilful surgeon, but we wonder what besides? The old custom of spending a year or so in a physician's service by way of probationary experience was a splendid thing in more ways than one. It was Councilman, we believe, who said that the study of medicine was heaven, but its practice hell, and it is sad to have to follow, unwillingly or unwittingly, the example of Satan.

We are interested to note that Dr. Ochsner would revive the old custom. He suggests the following requirements for the practice of medicine:

Accredited high school education; two years' useful, character building and judgment forming work if possible under the guidance of an able general practitioner; four years' intensely practical medical education; one year intern service. Of the two years' apprenticeship he says:

One of the tragedies of life, not infrequently met with, is the case of a young man who has spent eight or ten years preparing for a professional career only to find that he is entirely unsuited for it, either temperamentally or otherwise, or that for some reason he fairly detests it. Some who find themselves thus situated assuage their sorrow and disappointment by marrying rich heiresses and are then usually permanently lost to medicine or any other life of service. The rest flounder along never satisfied and never satisfactory. This could all be very largely avoided if during the two years when they are accumulating practical experience and some of the wherewithal with which to pursue their medical studies, the medical student would spend his leisure time doing systematic reading under the guidance of a competent medical practitioner and be permitted to visit patients with such a one, and help him some in his work, much after the fashion of the old preceptor system. In this way he would have an opportunity to test his fitness and adaptability for the profession before spending many years and much money, only later often to find his mistake. The above scheme would give the student a chance to develop the habit of application and industry, to get some practical experience in life with an opportunity to develop judgment and resourcefulness and persistence, things the present day graduate needs so sorely. It would give him two years of earnings with which to pursue his medical studies and would make it possible for country boys again to enter the medical profession in greater numbers. It would also let the student finish his undergraduate studies by the time he is about twenty-five years of age. If he would now associate himself with an older, busy general practitioner for a couple of years he would be in a position to be a much more useful member of society than is the average graduate of today because he would better supply the needs of the times.

Of medical instruction he remarks: "What medicine needs is not so much more facts as a proper correlation of facts already known. As things stand today the undergraduate student is fairly overwhelmed with facts, the great majority of which are of little practical value." We are reminded of the first edition of one of the finest physiologies ever put into the hands of the medical student. In its first edition there was, at the end of each of the ten or so chapters, a summary in italics of all that was really known or worth knowing in the preceding pages. This summary amounted to a total for the entire book of not more than fifteen pages. In later editions this summary has been omitted, and the reason is obvious. The sensible student got the essentials of the year's work from those few pages and did not waste his time mulling over the remainder of the text. It was fine for the pupil but bad for the professor.

ASEPSIS

As the theory of evolution dates far back in history but needed the overwhelming array of evidence laboriously set up by Darwin and Spencer to impress the average, and above the average, mind, on the subject, so asepsis was known glimmeringly and empirically long before Lister made the method rational. There is some ignorance for which the human race cannot forgive itself, but for ignorance of bacterial infection it had a good excuse in its poor eyesight, so far as the observation of microbes and their doings were concerned.

G. D. Hindley, in the *Nineteenth Century,* has called attention to the fact that antiseptic surgery is one of the "old lost arts" which is now recovered. Without any definite theory to go upon, any more than there was for the early observed effects of quinine in malaria, there were, early in the fourteenth century, "men, who not only knew that wounds could be healed without suppuration, but who practised continually, and with marked success, the cleanly letting alone of wounds which is the basis of aseptic surgery today. They used as a mild antiseptic application warm wine alone." Henry de Mondeville, who was the chief apostle of this method of treatment, "developed a definite theory of wound healing, and practised a method, which, in essentials, was indistinguishable from those of today." The neglect and loss of this method was "the greatest of all the misfortunes that have befallen the world. For it is hardly possible to imagine the heights to which surgery might have arisen in the course of six hundred years of the practice of aseptic methods."

De Mondeville got his idea from his teacher, Theodoric, of the Bolognese school, who rebelled against the universally accepted doctrine of Galen that suppuration of wounds was a natural condition, and must be promoted rather than prevented. Proceeding to the opposite course of treatment from the great Galen, he took every means to stop hemorrhage, he did not probe the wound, he did not enlarge it, and he did not insert packing or tents. He poured in warm wine, closed the wound at once with sutures, and applied fomentations of pads soaked in wine. "It cannot now be ascertained what was the alcoholic strength of the wines of Italy in the fourteenth century, but it may be assumed beyond all doubt that they were of sufficient strength to have some antiseptic power. And as compared with the greasy and septic preparations recommended by Galen and all his successors for a thousand years, warm wine has such advantages that it must be regarded as the predominating factor in the success of wound treatment" of these innovators.

"It is quite certain that nothing more than a high grade empiricism can be asserted for de Mondeville,

but he found that wounds could be made to heal aseptically by use of certain methods and he proclaimed the fact from the housetop with a great show of logical argument and ratiocination." He was indeed a bold man, for he dared say that "God did not exhaust all His creative power when He made Galen." It was a time when it was dangerous to oppose authority so universally accepted. The fundamentalists were all powerful. These two surgeons were antiseptic heretics against the medical faith fathered by Hippocrates, Galen, Paulus of Aegina and Avicenna. The new method was looked upon with grave suspicion and it practically passed away with the death of de Mondeville for want of another heretical champion. "Guy de Chauliac (the great surgical writer of the next generation) in 1363 speaks of the method with a certain contempt entirely rejecting the new theory of suppuration and the surgical world followed his leadership." Paracelsus rebelled against the Galenic teaching and declared that what wounds needed in the way of help to healing was nothing. He did not advocate the use of wine, however, and probably knew nothing of such treatment. With the death of Paracelsus in 1541 surgery, both in theory and practice of asepsis, " 'reeled back into the beast', and the long night of dirt and suppuration was never again broken until Lister at last made his great deductions from Pasteur's work on microbes."

LOCKE ON CHILD WELFARE

John Locke, gentleman and philosopher and author of the world renowned *Essay on the Human Understanding* and a contemporary of Sydenham, wrote in 1690 a book on child welfare under the title *Some Thoughts Concerning Education*. In his preface he says "I myself have been consulted of late by so many who profess themselves at a loss how to breed their children, and the early corruption of youth is now become so general a complaint that he cannot be thought wholly impertinent who brings the consideration of this matter on the stage, and offers something if it be but to excite others, or offer matter of correction. For errors of education should be less indulged than any. These like faults in the first concoction, that are never mended in the second or third, carry their afterwards incorrigible taint through all the parts and stations of life."

The first part of the book is devoted to the consideration of infant welfare, or, as he puts it, "Not what a physician ought to do with a sick and crazy child; but what the parents without the help of physick, should for the preservation and improvement of a healthy or at least not sickly constitution in their children. And this perhaps might be dispatched in this one short rule, viz., that gentlemen should use their children as the honest farmers and substantial yeomen do theirs. It was only the other day that a mother told me she had been paid a fine compliment on her children. A workman engaged in the house had been overheard saying to his mate, "Nice children, these, not like gentry's children."

He deals with the management of the child from the physical viewpoint. Warmth, bathing, fresh air, clothes, diet, sleep are all discussed in turn but it is in the psychological aspect of the question that Locke is most deeply interested. He was no believer in excessive punishment and could not conceive that any correction would be useful to a child, where the shame of suffering for having done amiss, did not work more upon him than the pain. Nor was he in favor of a flow of constant rewards and on this point thus expresses himself: "He that will give to his son apples or sugar plums, or whatever of this kind he is most delighted with to make him learn his book, does but authorize his love of pleasure and cocker up that dangerous propensity which he ought by all means to subdue and stifle in him. If you can once get into children a love of credit, and an apprehension of shame and disgrace, you have put into 'em the true principle, which will constantly work, and incline them to the right."

And again of tasks he said: "None of the things they are to learn should ever be made a burden to them or imposed on them as a task. Whatever is so proposed, presently becomes irksome; the mind takes an aversion to it, though before it were a thing of delight or indifference. Let a child be ordered to whip his top at a certain time every day whether he has or has not a mind to it, let this bit be required of him as a duty, wherein he must spend so many hours, morning and afternoon, and see whether he will not soon be weary of any play at this rate."

Locke understood clearly the mental outlook of the child. When a child by constant chiding and fault finding is made to feel hopelessly unworthy, he becomes abashed in spirit and loses all zest for his task and desire to succeed. Such treatment at school is frequently the cause of gross failure. The child becomes in a high degree self conscious and sinks with indifference to the bottom place in the class regarding all struggles to rise as futile.

Lastly the philosopher considers adolescence and manhood. It is interesting to know that the sons of men of substance in these spacious times were expected to marry and propagate at the age of twenty or twenty-one. On this point Locke sagely remarks. It would be no prejudice to his strength, his parts or his issue, if it were respited for some time, and he had to leave to get in years of knowledge, the start a little of his children, who are often found to tread too near upon the heels of their fathers, to the no great satisfaction either of son or father.

Locke knew a great deal of common sense child welfare and child psychology. In those days scientific psychology was unknown but a child now might be reared and educated successfully by following the precepts of Locke.

DEATH OF A GREAT WOMAN SURGEON

Dr. Louisa Brandreth Aldrich-Blake passed away recently in London at the age of sixty. She was born in 1865 and came of a family long settled in Suffolk on the east coast of England. Her father was a country clergyman. During her early education at home she evinced her aptitude for the career she followed subsequently. When only ten years old she set the leg of a neighbor which had been broken in an accident. After that there was no question as to what calling in life she was best fitted for.

On leaving Cheltenham Ladies' College she went to the University of London where she distinguished herself by being the first woman to become master of surgery. In 1892 Miss Aldrich-Blake took the London University M.B., with first class honors in medicine and obstetrics, at that time being a student at the Royal Free Hospital, the London School of Medicine for Women. She then took the B.S. with first class honors qualifying for the gold medal. After taking the M.D. and M.S. she joined the staff of the Royal Free Hospital as surgical registrar and anesthetist.

She was elected house surgeon to the new hospital for women known as the Elizabeth Garrett Anderson Hospital for Women, in memory of another great pioneer woman surgeon and surgeon to the Canning Town Women's Settlement Hospital. In 1914 Dr. Aldrich-Blake was appointed Dean of the London School of Medicine for Women, a position in which she exercised great influence upon the many thousands of medical women who passed through the school as students. During the war she helped to organize medical services and hospitals overseas. Over and above her surgical work she was very fond of travel and reading. After the war she made a tour of the large hospitals of America and will be remembered and regretted by those of the medical profession here with whom she came in contact. In the New Year Honors of 1925 she was created a Dame of the Order of the British Empire, an honor corresponding to that of the knighthood of that order. Miss Aldrich-Blake was almost the first woman in Great Britain to practise general surgery. For longer than a year before her end Dr. Aldrich-Blake had led a life of suffering which she never permitted to interfere in any way with her work. She bore both pain and disability with unflinching courage and cheerful equanimity and was active up to a few days of her death.

It is stated that only a few weeks before she passed away she worked often for sixteen hours a day, and performed as many as nine operations in one afternoon. Dr. Mary Scharlieb, the grand old woman of medicine, and herself, with Dr. Elizabeth Blackwell, Dr. Jex-Blake, Dr. Elizabeth Garrett-Anderson and Dr. Aldrich-Blake, a pioneer in medicine, stated in an appreciation of Dr. Aldrich-Blake published in a recent number of the *News of the World,* that the late dean of the London Women's School of Medicine was a great surgeon and invaluable Dean, but far more important than these qualities were those which made her an example as a leader among medical women and medical women students. "Her personality," added Dr. Scharlieb, "was both great and fine, and she will be held in most loving remembrance by all who knew her."

CAUSES OF DEATH

The report of the Surgeon General of the United States Army for 1924-1925 gives some interesting data on causes of deaths. There were the same number of deaths from disease in 1924 as in 1923, but eight more from violent causes. However, due to increase in the number of enlisted men, the death rate from all causes was lower.

The leading cause of death, as was the case in the previous year, was not infectious diseases, but suicide. There was the same number as in the preceding year. Second came tuberculosis, with a slight increase in number. Automobile accidents advanced from seventh place in 1923 to third in 1924. Balloon and airplane accidents again stood fourth, with a slight decrease in number. Twenty-one of these occurred among officers. During the eight year period from 1917 to 1924 there were 874 deaths in the army as the result of airplane accidents. This number is exclusive of the casualties of the World War. Of these deaths, 520 were among officers and 354 among white enlisted men. During the past five years the average annual death rate, calculated upon the Air Service strength, was for officers 26.95, and for enlisted men 2.61, and similarly in 1924 the officers' rate was 21.04 and the enlisted men 1.81. But the number of crashes per hour of flying hours for the heavier than air machines decreased from one crash to two hundred flying hours in 1921 to one crash in five hundred flying hours in 1924, and the fatalities from one to 955 flying hours in 1921 to one to 3,365 in 1924. The death rate for officers from injuries was almost twice as high as that for any group of enlisted men. Of the sixty-four deaths which occurred among them, twenty-nine were from disease, twenty-one from airplane and balloon accidents, six from suicide, four from automobile accidents, and four from other violent causes. Accidental drowning has been responsible for 818 deaths within the past ten years. Within the same time there have been 254 deaths from homicide. Automobile accidents have caused 463 deaths in the last eight years. There have been 1,015 suicides during the last ten years.

News Items.

Hospital Boat in Alaska.—About five thousand people on the Yukon River will have the benefit of medical service from a well equipped hospital boat, carrying a staff of a physician and two nurses.

Lye Bill Passed—The bill advocated by the medical profession, to safeguard the sale of lye and other corrosive substances, has been passed by the Senate. This provides that containers shall be marked conspicuously with the word poison.

Library Extension Service.—The state university of Indiana is planning a package library service to physicians in the state. Similar service is already provided by the University of Wisconsin, in cooperation with the state society, and also by the American Medical Association.

Occupational Disease.—For the five year period from 1920-1925, 3,241 cases of occupational disease were reported in Ohio. Dermatitis among rubber workers accounted for over eighty per cent. of all cases reported, with lead poisoning second—fourteen per cent.

Changes at Boston City Hospital.—The sum of $750,000 has been appropriated for a new maternity building at the Boston City Hospital, to be built at Concord and Albany Streets, and $250,000 has been appropriated for a research laboratory for the study of streptococcic infections. A building for outpatients and a new x-ray laboratory have recently been completed.

Exchange Professor at Johns Hopkins.—Robert W. Hegner, Ph.D., professor of protozoology at Johns Hopkins University School of Hygiene and Public Health, has gone to England for six months, to serve as exchange professor at the London School of Hygiene and Public Medicine. Dr. John G. Thomson, of the London school, will replace him at Baltimore.

Appointments in Police Department.—Dr. Patrick J. Murray, chief surgeon of the Police Department of New York City, has been retired, and will be succeeded by Dr. Daniel J. Donavan, who has been police surgeon for over twenty years. Dr. Joseph S. Baldwin has been advanced to deputy chief surgeon, and Dr. Harry C. deBrun has been appointed surgeon.

Research at Montefiore Hospital.—The establishment of the Hilda Stich Stroock research fellowship is announced by Montefiore Hospital for Chronic Diseases, New York. This fellowship provides twelve hundred dollars a year, and may be taken in the medical, neurological, tuberculosis, or cancer divisions of the hospital. Appointments are for one year, and applications should be sent to the Medical Director.

Study of Cerebral Physiology.—Two years' research in cerebral physiology will be undertaken by the Iowa State University, under direction of Dr. Samuel T. Orton, director of the State Psychopathic Hospital and head of the department of psychiatry of the University. The funds will be furnished by the Rockefeller Foundation. A field unit will hold psychiatric clinics in small communities, and a well trained personnel will conduct the laboratory research.

Public Health Nursing.—The University of Montreal has established a school for public health nurses to meet the need in the Province of Quebec for French speaking nurses trained in public health.

Charcot Prize.—A triennial prize of four thousand francs has been established with the surplus funds from the Charcot centennial of last year. This will be awarded by the Société de Neurologie of Paris to a beneficiary it will select and to whom it will assign a topic for research.

Tinkham Scholarships.—One or more scholarships at the University of Vermont School of Medicine are provided for in the will of the late Dr. Henry Crain, dean of the school of medicine. His medical library was given to the college, and his surgical instruments to the Mary Fletcher Hospital.

Study of Maternity Homes.—The Division of Maternity, Infancy and Child Hygiene of the New York State Department of Health, is planning a survey of unincorporated maternity homes in the States. The law provides that all institutions for maternity care shall be licensed by the local board of health; and it is estimated that of the 145 institutions in the state, at least fifty are operating without a license.

Cosmetic Regulations.—Interesting regulations are in force in Italy, regarding cosmetics, dyes, and other preparations for the skin. The name of the manufacturer or seller must appear on the package, and if poisonous substances are part of the preparation, the exact nature of the contents must be printed on the label, and a yellow band attached with information printed on it regarding possible injury from use of the preparation.

Graduate Study of Tuberculosis.—A course in the study of pulmonary tuberculosis and respiratory disorders will be given from October 8th to 23d, at Strasbourg, France, by the Association Alsacienne et Lorraine contre la Tuberculose, in cooperation with the faculty of the University. There will be lectures, presentation of cases, radiological and bacterial demonstrations. Applications should be made to Dr. E. Vaucher, in charge of the course.

Tuberculosis Hospital Admissions.—An admission bureau for all public patients to tuberculosis hospitals and sanatoria, has been arranged by Dr. Louis I. Harris, Commissioner of Health, and Dr. Bird S. Coler, Commissioner of Public Welfare. This will simplify the admission procedures, the Department of Public Welfare conducting the investigations into the economic conditions of the patients and the Department of Health determining the medical requirements of the cases.

Special Course in Stomatology for Dentists and Physicians.—The American Stomatological Association in cooperation with the faculty of the Post-Graduate Medical School of Stomatology at New York City announce a special course of ten lectures for graduates in dentistry and medicine in Stomatology and Focal Infection to begin October, 1926. The classes will be limited in number and students will be registered in the order in which their applications are received. For information, address the Registrar, Post-Graduate Medical School of Stomatology, 135 Elliot Place, New York City.

Gifts and Bequests.—By the will of the late John G. Carruth, the Episcopal Hospital in Philadelphia received $10,000; the Homeopathic and Presbyterian Hospitals each received $5,000.

A bequest of $1,000 was received by the New York Orthopedic Hospital by the will of the late Mary L. Willard.

The New York City Cancer Institute has received $10,000 by the will of Mrs. Annie Lendrock.

The late Mrs. Hannah Heyman, of New York, bequeathed $50,000 each to the Montefiore Home, the Hebrew Orphan Asylum and the New York Guild for Jewish Blind, and $25,000 to the Home for Aged and Infirm Hebrews.

By the will of the late Amanda J. Leslie the Home for Incurables, Philadelphia, the Blind Asylum and the Friends' Hospital received $32,000.

One thousand dollars was bequeathed to the Montefiore Hospital, New York, by the late Supreme Court Justice, David Leventritt.

Personal.—Dr. Aaron Scott Maclaire has been appointed adjunct professor of neurosurgery at the New York Polyclinic Hospital and Medical School, a promotion from instructor.

Dr. Melville D. Dickinson, of Troy, N. Y., has been appointed a district state health officer in the New York State Department of Health.

Dr. J. Arthur Buchanan, of Brooklyn, has moved his office to 510 Ocean Avenue.

Dr. J. Lewis Amster has been appointed attending surgeon to the Jewish Memorial Hospital and consulting surgeon to the Bronx Eye and Ear Infirmary.

Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research, has been made an honorary member of the Microbiological Society of Leningrad, Russia.

Dr. Charles C. Hedges, in charge of public health work for Marshall County, West Virginia, has been appointed second assistant director of the Johns Hopkins Hospital, Baltimore, to have charge of the dispensaries.

Dr. Stanley E. Dorst, of Cleveland, Ohio, has been appointed assistant professor of internal medicine at the college of medicine of the University of Cincinnati.

Dr. Robert Müller, of New York, chief of the Zander Medicomechanic Institute of Carlsbad, has sailed for that institution, to practice during the season. He will return to New York in the fall.

Dr. Benjamin Lipshutz has been appointed attending surgeon of the Mount Sinai Hospital of Philadelphia.

Dr. Clarence L. Scamman, deputy superintendent of health of Providence, R. I., has resigned to take a position as deputy commissioner of health and director of the division of communicable diseases of Massachusetts.

Dr. and Mrs. William C. Mitchell, of Philadelphia, have recently celebrated their fiftieth wedding anniversary.

Dr. H. I. Spector, tuberculosis controller of St. Louis, has resigned to engage in private practice.

Professor Selskar M. Gunn, of the Rockefeller Foundation in Paris, has recently arrived in New York.

Society News and Notes.

Dr. Alfred J. Asgis, general secretary of the American Stomatological Association, spoke before the graduate students of New York University, April 17th, on Biological Foundations of Dental Hygiene.

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Dr. R. L. Kahn, of the Michigan State Department of Health, has recently been in New York at the invitation of the New York State Medical Society. He demonstrated the Kahn precipitation test at the meeting of the society held recently at the Waldorf-Astoria. Dr. Kahn was guest of honor at a dinner given at the City Club by Dr. Alfred M. Hellman, of New York City.

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The Section of Genitourinary Surgery of the New York Academy of Medicine meets on Wednesday evening, April 21st, at 8:30. The program is to consist of presentation and discussion of case reports, new instruments and specimens. Those taking part are Dr. H. J. Reilly, Dr. B. S. Barringer, Dr. Paul W. Achsner, Dr. W. R. Delzell, Dr. E. A. Bullard, Dr. J. C. Pennington, Dr. J. Sturdevant Read, Dr. R. B. Henline, Dr. V. C. Pedersen, and Dr. A. Hyman.

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The recently organized International Medical Society announces that its mailing address will no longer be the New York Academy of Medicine, but 258 Riverside Drive, care of Dr. J. Maliniak.

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Among April meetings to be held at the New York Academy of Medicine are the following: the Section of Obstetrics and Gynecology, on Tuesday evening, April 27th, at 8:30, with reports of cases by Dr. Julius Kurzrock, Dr. Henry C. Falk, and Dr. Thomas H. Cherry; papers by Dr. E. G. Langrock on Treatment of Abortion; Dr. George L. Brodhead on Treatment of Placenta Previa with a Report of 165 Cases; and Dr. Leandro Tomarkin on Clinical Experimentation in Sepsis and Pyelitis with Antimicrobin; the Section of Laryngology and Rhinology on the evening of April 28th at 8:30, with a program by the Department of Otolaryngology of the Lenox Hill Hospital; and the Section of Historical and Cultural Medicine on Thursday evening, April 29th, at 8:30, with papers by Prof. Herbert R. Cross, of New York University, on the Historical Orientation of the Art and Time of Akhnaton (Amenhotep IV, 1375-58 B.C.), with lantern slides; and a Psychohistorical Study of Akhnaton, Father in Law of Tutankh-amen, First Idealist and Originator of a Monotheistic Religion, by Dr. L. Pierce Clark.

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The seventh lecture of the Harvey Society series was given at the New York Academy of Medicine on the evening of April 17th by Dr. B. Brouwer, professor of neurology at the University of Amsterdam. His subject was Comparative Anatomy and Nerve Pathology.

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The Advisory Commission on Child Welfare of the League of Nations has recently initiated a move-

ment to protect children throughout the world from undesirable moving pictures by adopting a resolution to create central censorship boards in each country composed of educationalists and parents. The resolution stipulates that these boards shall prohibit the presentation of films demoralizing to the mentality and morality of children, and encourage films which are educational in nature. It also recommends an international entente between the national boards with a view to international interdiction of improper pictures, and national legislation to insure proper hygiene and ventilation of moving picture theatres, with ample exits and prohibition of inflammable films.

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The Baltimore Medical Club, of New York, consisting of physicians practising in New York City, Brooklyn, and other neighboring cities, who were graduated from the medical colleges of Baltimore, will celebrate its Spring Meeting by a banquet at the Hotel Commodore, on April 29, 1926. Dr. Arthur M. Shipley, professor of surgery at the University of Maryland, will be the guest of honor, and make the address of the evening. Other entertainment will be provided. Dr. James M. Hitzrot is president of the society; Dr. David E. Hoag, vice-president; Dr. William B. Pritchard, chairman of the executive committee; Dr. Leslie E. Gager, secretary, and Dr. L. Winfield Kohn, chairman of the entertainment committee. Tickets for the dinner may be obtained from Dr. L. Winfield Kohn, 427 Park Ave., New York City.

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The Women's Foundation for Health, New York City, is giving a series of health talks over the radio. How to Be Popular is the title of one reprinted in the *Mental Hygiene Bulletin* for February. The speaker broadcasting was Dr. Anne T. Bingham, at that time psychiatrist of the Girls' Service League of America.

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At the thirteenth annual convention of the New Jersey Mosquito Extermination Association recently held at Atlantic City, it was announced that for an annual expenditure of $200,000 on mosquito extermination work, the state of New Jersey has received $43,000,000 in increased taxable values.

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The International Birth Control Organization has announced a conference on birth control to take place August 25th-27th in Geneva prior to the seventh assembly of the League of Nations. It is planned to set up within the international organization an all year round bureau to serve as a liaison centre for the birth control movements in the various countries. Among prominent American scientists who will participate in the conference are Dr. Raymond Pearl and Dr. Edward M. East. Among members of the International Conference are H. G. Wells, Lytton Strachey, Julian Huxley, Dr. Wesley C. Mitchell,, Havelock Ellis, Dr. and Mrs. Frederick Peterson, Sir W. Arbuthnot Lane, and John Maynard Keynes.

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At the annual luncheon held recently in New York City of the Vocational Service for Juniors, it was announced by Dr. Mary H. S. Hayes that 10,285 applicants for positions had been received. Of these fifty-eight per cent. were placed, and each one followed up. Dr. Joseph Jastrow, professor of psychology at the University of Wisconsin, spoke at the luncheon on Personality and the Wisdom of the Moderns. "Students go to college," he said, "not to be educated, but to learn to direct motive and acquire personality. You cannot run an adult well on child motives, and yet we have been trying to do it."

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Dr. Auregan, of Lannion, France, recently outlined before a meeting of the French Dermatological Society his discovery of a remedy for lupus. This remedy consists of a deep curettage of the affected parts followed by a thick application of powdered permanganate of potassium completely covering the diseased areas. Dr. Auregan reported that a single application has always proved to be an effective cure. He said that his successful use of the treatment had covered several years and included many patients, none of whom he was required to see more than three times after the application of the remedy.

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The National Committee for Mental Hygiene has announced its comprehensive program to be given at the American Health Congress at Atlantic City, May 17th-22d. The sessions will be for the most part of the round table type, selected because this seems best adapted to meet the needs of informal discussion, opportunity for which is frequently prohibited by the reading of formal papers. The general subjects chosen are the backward child, the problem child, problems of adolescence, and community and organization problems. Leaders of the discussions will be Dr. Howard W. Potter, Dr. H. C. Schumacher, Dr. Frankwood E. Williams, Dr. Douglas A. Thom, Dr. George K. Pratt, Dr. Charles Bernstein, Dr. Ralph P. Truitt, Dr. George L. Wallace, Dr. Marion E. Kenworthy, Dr. Frederick H. Allen, Dr. Arthur H. Ruggles, Dr. Christine M. Leonard, Dr. Lawson G. Lowrey, Dr. Sanger Brown, 2nd, Stanley P. Davies, Ph.D., and Jessie Taft, Ph.D. On May 20th and 21st there will be conferences of medical directors, executive secretaries, and other persons interested in organization, promotion, financing, educational campaigns, and similar projects in connection with state mental hygiene societies. These conferences will be informal and will provide an opportunity for an exchange of ideas.

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The American Child Health Association has announced that May 1st will be observed as "no accident day" for children. New York City will lead the country in the project. The whole police force has been pledged to cooperate, and Dr. Harris, commissioner of health, has called upon the Department of Education to warn children and their parents about traffic dangers. In Chicago the Boy Scouts, Camp Fire Girls, and similar organizations will aid the police in accident prevention. At midnight a telegrgaphic roll call of cities participating will be held by the Child Health Association to determine which city has been the safest for children during the day.

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The project for the creation of a federation of states to succor the victims of disasters was approved in principle by the League of Nations in 1922 and

1923, but assumed definite shape only after the fourth assembly of that body, which decided to submit it to the governments of its member states. Most of these approved, and the same referendum was sent to national Red Cross societies. After having studied the replies, the fifth assembly of the League of Nations decided to consider the project as adopted in principle, with revisions. A preparatory commission has drawn up statutes which were adopted in the main at the sixth assembly. The foundation of this International Relief Union will constitute an important step forward in international understanding, for under such a scheme no disagreements due to race, politics, religion or economic causes are to be feared.

Letters to the Editor.

ATTENTION LAYMAN!

NEW YORK, *April 7, 1926.*

To the Editor:

A little group of us were discussing matters in general at a recent dinner of the Bellevue Alumni Society when the question of fee splitting came up incidentally.

One of our friends quoted an occasion when the same subject happened to be discussed in a group of business men none of whom expressed disapproval of the payment of commissions. They did not understand why a practice common enough among business men should not be legitimate among doctors provided that "the right sort of goods were delivered." Right there is where the joker is played for an ace in the game.

When I first entered the profession fee splitting was unheard of, although it was rumored that some of the eye specialists were careless enough to accept commissions from manufacturers of glasses. There was plenty of disagreement among leaders of the profession on all sorts of subjects. If they united on any one idea, however, it was with the feeling that anything savoring of commercialism in the profession was taboo.

It is quite true that expert specialists in those days frequently failed to get their just desserts in the way of fees. The chief reason for this was that the general practitioner, keenly interested in every single feature of the welfare of his patient, extended this spirit into his consultation with specialists. He would say to one of his patients, for example, "Now you must have a surgical operation performed. I am very well acquainted personally with expert surgeons and I will ask one of them to do this work for you without making much of a charge." Over and over again I have known of physicians saying this sort of thing to people of large means. With the advent of the doctor who would divide fees there came an elevation of the subject into a different atmosphere but we would not call it elevation of the profession. It was a higher but colder atmosphere. A general practitioner who happened to be shameless no longer protected his patient. On the other hand he took him to someone who would charge a large enough fee to make the division something worth while. Good advice and wise counsel were relegated to minor position and fee was moved up to first position. Where is the layman who will fail to see this very blunt point?

I would not by any means imply that experts who now receive large compensation justly and properly for superior quality of work are to be classified among the raptores who look upon the ill man as prey. Dignified men of high standards who maintain the ideals of the profession are quite willing that superior skill should have a superior degree of compensation in medicine quite as much as in other professions. On the other hand the layman who allows a fee splitter to guide his destinies within the ranks of the profession is dealing with a man who is fundamentally untrustworthy and who needs watching; he belongs to the low caste group.

In all the liberal professions we find a nobility group and an expediency group. Each man knowing in his heart to which group he belongs acts accordingly in social relations. The matter was recently put very nicely to a young doctor, already notable, who went to the old physician of his family and said that he was in something of a quandary and did not really know whether to divide the fees or not. The inherent gentility of the old friend of the family allowed of no hiatus between question and answer. He said in effect "your parents are extremely proud of your accomplishments to date. Would they like to look forward to the time when your work is done to the epitaph 'fee splitter' on your tombstone?"

ROBERT T. MORRIS.

PERIODICITY OF PEPTIC ULCER SYMPTOMS

NEW YORK, *November 4, 1925.*

To the Editor:

Much has been said and written about the periodicity of the symptoms of peptic ulcer. Many explanations have been offered for this phenomenon but none seems completely satisfactory.

In the first place, I believe that this periodicity is not at all as frequent as is commonly supposed. In the early stages of this disease there do occur sometimes, but by no means always, remissions at greater or lesser intervals and of variable duration; in the more advanced stages the symptoms are well nigh continuous.

For the remissions there is, I believe, a very simple explanation. When the symptoms of pain, heartburn, etc., are at all severe, the patient naturally will cease eating those foods which, as experience teaches him, cause an aggravation of his symptoms. On account of the pain he will curtail his activities in both business and pleasure. He will rest more than usual. As a consequence, his symptoms will abate. He will continue this regimen until the memory of his pains gradually fades from his mind and he gradually resumes his former activities and yields to the allurements of the "hot dog" and the enticement of chop suey. After a while his symptoms will return and he starts round his circle again.

This, I believe, explains the periodicity in the symptoms of peptic ulcer.

MARKS S. SHAINE.

Book Reviews

CARDIOLOGY

Clinical Disorders of the Heart Beat. By Sir Thomas Lewis, C.B.E., F.R.S. London: Shaw & Sons, Ltd., 1926.

The appearance of the sixth edition of this well known classic on the cardiac irregularities attests to its value and to its popularity. In it are presented the methods of clinical diagnosis, prognosis and the elements of treatment of sinus arrythmia, heart block, extrasystoles, paroxysmal tachycardia, auricular fibrillation and flutter, and alternation. Special emphasis is laid on the use of the unaided senses in the recognition of the irregularities of the heart, graphic records being used merely as illustrations. For students and practitioners there is no better book on this subject. Many selfstyled cardiologists might well take to heart the following statement of this master of graphic methods. "There are few important disorders of the heart beat which the practised senses may not recognize unaided."

CLINICAL STUDIES

Clinique Médicale de L'Hôpital Beaujon. By Ch. Achard, Professeur de Clinique Médicale a la Faculté de Médecine de Paris, Membre de l'Académie de Médecine. Paris: Masson et Cie, 1925.

The second series of Achard's clinical studies contains a number of unusually interesting lectures in his clear and finished style. They deal not only with diagnosis and treatment but with pathogenesis and questions of blood chemistry, as well. Among the reports worthy of special mention we note a case of Morvan's disease. There are excellent chapters on gout, diabetic gangrene, the symptoms, pathology and treatment of diabetic coma, alcoholic paralysis, syringomyelia, Laënnec's hepatic cirrhosis, salt free diet in the treatment of cirrhotic ascites, bichloride poisoning, lead nephritis, and uremia.

X RAY

Röntgenbehandlung Innerer Krankheiten. Von Prof. Dr. W. Parrisius, Privatdozent an der Med. Univ.-Klinik, Tübingen. Mit vierundfünfzig Abbildungen. Leipzig: Verlag von S. Hirzel, 1926. Pp. vii-227.

This handbook, dealing with röntgenotherapy in internal medicine, is intended as a companion book to Jüngling's volume on the röntgenotherapy of surgical diseases. Since the end of the World War, the author has conducted the röntgenotherapeutic department of the Medical Clinic at Tübingen, and he has made it his task to write a book in which the wheat is separated from the chaff in this field of medicine. An outline is given of the physical basis of röntgenotherapy, as the author has found that the röntgenotherapist usually does not know enough about it to give the patient the utmost benefit of the treatment, to which he is entitled. Just enough is included to enable one to use the x ray apparatus intelligently. The physicotechnical part forms the first section of the book. It is couched in simple language and is very valuable.

The second section is devoted to the clinical aspect of the subject, and gives the biological principles and clinical results based on the literature and a critical study of his own results. Except in the cases of leucemia and exophthalmic goitre, about which the literature is too extensive to mention, the bibliography is given very completely. Some of the author's own views are given in certain cases, as in the value of röntgenotherapy in pulmonary tuberculosis and exophthalmic goitre, as these are still moot questions.

The subjects discussed in the second section are the effect of x rays upon the hematopoietic organs, radiotherapy of blood diseases, of tuberculous diseases, of bronchitis and bronchial asthma, of endocrine disorders, and of nervous diseases. The final chapter includes the radiotherapy of miscellaneous conditions and diseases, such as prostatic hypertrophy, arthritides, gastric ulcer, heart disease, nephritis and anuria, liver diseases, tonsillar hypertrophy, and x ray intoxication.

On the whole, the book is up to date and well written. It ought to be of great value to every one who is interested in the subject of röntgenotherapy.

CANCER

Das Krebsproblem. Rückblicke und Ausblicke, Grund- und Scheinprobleme der Krebsforschung, Behandlung und Verhutung. Klinisch-Biologisch Darlegungen. Von Dr. Alfred Greil, Innsbruck. Leipzig: Verlag von Johann Ambrosius Barth, 1925. Pp. viii-181.

The pathologist recognizes that he has reached the limits of the objective demonstration powers of the microscope and the experiment; the clinician and surgeon have reached the utmost possibilities of local surgical therapy. Both now must admit that cancer cannot be cured by the methods followed heretofore. The clinician and pathologist can now only ask the questions which the pathological physiologist must eventually answer. Only the resource to heredity, the systematic investigation of the manner in which embryologic and ontogenetic differences, all disparity of growth, all specification of the constantly correlated differentiation of structure and function out of the condition of absolute indifference, of true uniformity of absolutely similar cells of the mother tissue, are and were acquired; the discovery of changes in condition, through which this epigenetic occurrence can be changed pathologically, can bring the explanation and solution of the cancer problem. Without an insight into the regularities of the dynamics of development, variation and heredity, without the application of Lamarck's and Goethe's, Darwin's and Häckel's, Bär's and Schleiden's recognized general principles of change of form in the germinating and free life, neither the origin of tumors, nor the heredity of the predisposition to such variation, nor the neoplastic diathesis, can be learned and prevented.

The author asserts that we know and suspect that the problem of cancer is only a special case of the causation, treatment and prevention of pathological, endogenic variations in children of healthy parents, of individual children of the same parents, that the acquisition of the first born of such idiopathic conditions proceeds definitely not before or through the impregnation, but most certainly metagam prenatally; that the cancer is rooted not in the germinal cell but in the maternal tissues, and that it can be prevented only by the preservation of the proper development and effective condition of the placental

inoculative growth. Pregnancy is always the most serious constitutional test of the woman.

The cancer investigations of the last twenty-five years and the treatment of cancer during the last thirty years, respectively, are criticized and evaluated. According to the author, the main problem in the investigation of cancer is the application of Darwinism. The pseudoproblems of cancer are refuted. A long and separate chapter is devoted to the future of the investigations of neoplasms as a working program and a reply to Dürck's criticism of the "naturalist's method of the investigation of cancer." The theory and future of the treatment of cancer, the *therapia sterilisans magna combinata,* is discussed in detail. The final chapter deals with the nature and origin, the heredity and prevention of the neoplastic diathesis, and of the general and local predisposition, and also the hygiene of cancer.

The author presents a novel and hitherto neglected aspect of cancer in a philosophic manner. In view of the recent work of Gye on the parasitic theory, his absolute rejection of this theory of cancer is interesting.

HIGH FREQUENCY CURRENTS IN OTORHINOLARYNGOLOGY

La Haute Fréquence en Otorhinolaryngologie. (Diathermy, High Tension, Effluvium, Diathermocoagulation, Surgical Etincelage.) Par Leroux-Robert. Preface du Professeur D'Arsonval. Avec 74 Figures. Médicine et Chirurgie Pratiques. Paris: Masson et Cie, 1925. Pp. 166.

The use of the high frequency current in otorhinolaryngology by Leroux-Robert is entirely new. This current is the result of d'Arsonval's work, and is one of the most important discoveries in physiotherapy. In otolaryngology it finds indications for all its forms. It is an aid to medical treatment because it operates on a highly nervous and extremely vascular sensorial sector, but above all because it is connected with the sympathetic and endocrine systems; it is an aid to surgical treatment because it spreads over an uneven territory, containing outlets, either narrow or difficult of access, and closed cavities.

In the domain of medicine, Leroux-Robert gives the result of his research work for seven years in the use of diathermy in chronic laryngitis, Eustachian catarrh, and exudative otitis, and high tension in eczema, rhinorrhea, headache of sinus origin, tonsillar or laryngeal pains, spasms of the esophagus, otosclerosis, tingling in the ears, giddiness, ozena, and other conditions.

The author reminds us that the use of diathermocoagulation was introduced into rhinolaryngology in 1912 by Bourgeois and Poyet. Besides his personal observations, he sums up synthetically the work of his predecessors in the treatment of hypertrophy of the tonsil, papilloma, angioma, hemorrhagic fibroma of the nasopharynx, atresia, strictures, adhesion between the palate and the pharyngeal wall.

Surgical etincelage having not yet attracted attention, he draws a parallel between the results of this method and those of diathermocoagulation with regard to the treatment of mild tumors, cancer, tuberculosis and lupus.

Leroux-Robert appeals both to specialists in rhinolaryngology and to those general practitioners who are interested in the results of high frequency.

By an arrangement of the text enabling instant information on any point, an abundance of diagrams and plates, and a synoptic plan, this book becomes an extremely objective document. It is accompanied by photographs which give a vivid impression of the actual demonstration.

Professor d'Arsonval, who has inspired by his genius all research work on the medical high frequency current, has written the preface.

The book should prove of great value, not only to the specialist in diseases of the ear, nose, and throat, but also to the general practitioner.

TUMORS OF THE EYE

Die Bösartigen Geschwülste des Auges. Von H. Sattler. Mit 25 Abbildungen im Text und 9 Tafeln. Leipzig: Hirzel, 1926.

In this volume the well known Leipzig ophthalmologist has been able to add many details to his study of the malignant neoplasms of the eye, originally appearing as a special chapter in the *Zweifel-Payr Klinik der Bösartigen Geschwülste.* This applies particularly to the pathologicoanatomical aspect. Sattler notes with regret the frequency with which malignant tumors of the eye escape early detection or correct diagnosis, so that treatment is not instituted in time to be of real value. Accordingly he is at pains to lay special stress on clinical and ophthalmoscopic features which make an early diagnosis possible.

The illustrations, almost all of which are by the author, deserve more than a passing word, not only for their technical excellence and artistic beauty but for their didactic value. This applies to the drawings of the photomicrographs of sections, as well as to the color drawings of the fundus, particularly. The early stages of various intraocular growths are most instructively shown.

Sattler's volume deals not only with tumors of the optic nerve and retina, sarcoma of the choroid and iris, glioma of the retina, but with epibulbar sarcoma, naevus carcinoma, and malignant growths of the cornea, conjunctiva, and lids.

CELLULAR IMMUNITY

Die zelluläre Immunität in ihrer Einwirkung auf Entstchung und Behandlung von Konstitutions—und Infektionskrankheiten. Von Hofrat Dr. med. Adolf Theilhaber, München. Berlin: C. F. Pilger & Co., Medizinischer Verlag. Pp. 38.

This brochure contains the main lectures held by Theilhaber at the All Russian Gynecological Congress at Moscow in 1924.

It deals almost exclusively with cellular immunity and with its relationship to constitution, cancer, tuberculosis, atheromatosis, chronic arthritides, postoperative wound infections, and syphilis. The most important section is the one dealing with the "reinforcement of cellular immunity." In contrast to other investigators, the author attaches greater importance to the cellular, the nonspecific, the local and to the active immunity than to the blood and the specific immunity. All cells and all body fluids must contain protective arrangements against noxa. He recommends the stimulation of the activity of the lymphocytes (emulsion of spleen upon ulcerated carcinomas), the injection of proteins (of lymphocyte substance), diathermy, and other stimulants that result in a stimulation of the cellular immunity. The

author ascribes a special value to nonspecific cellular immunity in the prophylaxis of disease. The dissemination of cancerous diseases in all civilized countries assists the deficient cellular immunity. The diminished powers of resistance to excitants of disease should be attributed to an insufficient intake of mineral salts and to the increased consumption of meat and alcohol and to the use of nicotine.

MEDICAL ANNUAL

The International Medical Annual. A Year Book of Treatment and Practitioner's Index, 1925 (Forty-third Year). New York: William Wood and Company, 1925.

The issue of the *Medical Annual* under review has been prepared along the general lines laid down in the past, which have met with widespread approval.

Twenty-eight contributors, among them several of the best known English physicians and surgeons, are represented in this most useful volume. Not a few of the names among this list are well known in the United States.

The editors have prefaced the main work by an introduction which aims to set forth those advances of the past year which seem likely to become part of the permanent medical equipment. A few of the subjects thus considered are the injection of foreign protein in migraine, epilepsy and asthma; inoculation with malaria in general paralysis; the insulin treatment for diabetes; the treatment of chronic ulcerative endocarditis by injections of sodium cacodylate; a note on coeliac disease of early childhood and the effects of the administration of chlorides in the tetany of childhood. The work is crowded with most valuable medical data, covering every branch of medicine and surgery. It is surprising that so much material has been included within the covers of one handy volume and both the editors and publishers are to be congratulated on the result. This is a work which can be commended to the general practitioner with little time for wading through verbose textbooks.

AMERICA AND GERMANY

America and Germany, 1918-1925. By Sidney Brooks, Author of *America and Poland, 1915-1925* and *Russian Railroads in the National Crisis.* With a Preface by George Barr Baker. New York: The Macmillan Company, 1925. Pp. xviii-191.

This is "the record of intimate relations between the representatives of two nations connecting events the significance of which is brought out for the first time." It is the story of the help offered by America to Germany in the way of feeding the German population, giving at the same time a keen insight into the postwar feelings and public opinion of the conquered people. The problems of shipping and finance, upon which the success of the undertaking depended, are discussed. There was also the difficulty of Germany's internal dissension to be considered. This was aggravated by the hostility of the Allied nations, especially France. America felt the need of stepping into the breach.

The work of such men as Hoover, Dawes, the American Relief Administration, the Quaker feeding of children, etc., are all given ample consideration. The original correspondence on various subjects is reproduced.

The spirit of the American people toward Germany is best expressed in Hoover's words: "There is a country of sixty million people with whom the world has to live and whose economic cooperation is necessary to give life to the rest of the world. There is no other task open except to try to live and cooperate wholeheartedly with them." This has been accomplished. It is a wonderful story—an epic.

Medicoliterary Notes.

The *Porto Rico Health Review* is the title of the new monthly official bulletin of the Department of Health of Porto Rico, which began publication recently.

* * *

The Scottish Board of Control in its recently issued annual report states that there was a substantial increase during the year in the number of voluntary inmates of institutions for the insane and the mentally defective. A scheme is under way for building colonies for adult defectives which will reduce to a minimum the practice of committing such persons to institutions for the insane.

* * *

A new word has been made popular in America by the U. S. Weather Bureau. It is *smog,* which prevails when smoke and fog unite at the same density, the smoke particles crystallizing in chilly air and being carried along in a fog blanket. New Yorkers are in a position this winter to testify heartily to a knowledge and experience of smog.

* * *

There were 169,723 accidents in British factories and workshops in 1924, 956 of which were fatal, says the *Economic World.* The increase over 1923 of 44,162 accidents is considered as due to increase of reportable accidents under the new laws shortening the period of notification. By far the greatest proportion of accidents occurred in a limited group of industries. Shipbuilding and other building trades led in fatal casualties.

* * *

An analysis of five hundred conversations overheard in Columbus, Ohio, on the street at games, and in theatre lobbies, barber shops, and churches, is reported in the *Journal of Comparative Psychology.* Men's most frequent conversational topics were: Business, forty per cent.; sports and amusements, fifteen per cent.; talk about other men, among themselves, twelve per cent. The leading topic of women's conversation was men—twenty-two per cent.; clothes came in for nineteen per cent., and, among themselves, about other women, fifteen per cent.

* * *

The student yearbook of the senior class of Johns Hopkins University has recently issued to members of the class a list of twelve vices, which they are asked to arrange in the order of their seriousness, as an indication of the varying codes of morals of student groups. The vices are lying, cheating, gambling, stealing, sex irregularity, selfishness, snobbishness, vulgar speech, drinking, laziness, extravagance, and dancing. Another list of very personal questions was also sent out.

* * *

We noted the other day the fact that Professor Bergson had fourteen doctors in connection with his ailment. Bismarck ran through twenty-nine before he at last came to Professor Schwenninger, who succeeded in reducing his fat. Even then the result was not achieved without much personal friction. Schwenninger, his first interview, pestered his patient, the Iron Chancellor, with so many questions as to his habits of life that at last the prince lost his patience and said, "You ask me too many questions."

"Very well," said Schwenninger, "you go to a veterinary surgeon, as he won't ask you any."—*London Evening Standard.*

* * *

In Flikeid v. New York Life Ins. Co. (Minn.) 203 N. W. 598, it conclusively appeared that the insured, prior to his application for the policies on which suit was brought, had consulted and was treated by a physician, which facts he denied in the application, that this materially affected the

risk, and that the risk would not have been accepted had the truth been revealed. Judgments for plaintiffs were reversed and directed to be entered for defendant.

* * *

At a lecture recently given before the students of Cambridge University, England, by Kenneth Bell of Oxford, on the subject of preparation for their careers, the following "don'ts" were included: Don't have European wars in the middle thirties; Don't get engaged to be married in your first year at the University; Don't get married at twenty-four; Don't have six children; Don't get into an old established family business. "It is impossible," he is quoted as saying by the *New York Times*, "to have a successful future without the spice of hate. This is essential in order that you may react against your environment. . . . If you have a big mental test, it is not sensible to knock off tobacco."

* * *

An interesting article on the relationships between the origin of odors, the creation of colors, and the phenomena connected with light, heat, magnetism and electricity is contained in the current issue of the *Perfumery and Essential Oil Record*. The writer is A. C. Hopper who has been for a long time engaged in investigating the subject of odors and their causation. His work is based on the theory that the phenomena of odors, like those of light, are wavelike radiations, possibly "odorant ions" which are freed as unsatisfied electrical charges in the collision of atoms in strongly odorous substances.

* * *

The American taste for edible snails has increased so rapidly since the war the supply imported from France is now by no means adequate to fill the demand. Hence French snail raisers are using artificial rain and sunlight to produce a winter supply of *escargots au bibron* (milk bottle snails) equal in quantity to that of the summer months. This is done by covering the floors of cellars with mulberry leaves and sewing among them thousands of baby snails. Since snails always eat immediately after a shower followed by sunshine, the growers turn the hose on the mulberry leaves, then turn on strong electric lights. Thus the snails are "fooled" into thinking that summer has come, and stick their heads out of their shells. Then they are sprayed with a mixture of milk and flour from large jugs, of which they partake and grow to be best milk bottle snails for our consumption.

* * *

Dr. S. Monckton Copeman, lecturer on hygiene and public health at the Westminster Hospital School, London, has an interesting article in the *Pharmaceutical Journal and Pharmacist* on tests which he has been making as to the medical and dietary virtues of water cress. He has experimented with both animals and human subjects, and in both cases the results were markedly successful, particularly with the latter. The ages of the human subjects varied widely; in all cases they gained in weight, improved in appetite, their skin became much more healthful, and constipation if it existed was entirely removed. He also studied the cress itself to discover the chemical basis for its dietary virtues; and found that the residue from the extracted juices of the plant gave marked reactions with all the test solutions for alkaloids. A glucose present in the form of potassium salt was first isolated. He found also that water cress contains the three vitamines, A, B and C, together with salts of potash and iron, in addition to a considerable quantity of iodine.

* * *

The influence of the socalled evolution trial of last summer at Dayton, Tennessee, has extended to Moscow, where a play has been produced reproducing almost all the outstanding incidents of the trial. The author of the satire is D. D. Bogomolov, who makes his play revolutionary propaganda, showing, in his opinion, the hopeless disparity between capitalistic doctrines and the socalled pure sciences as represented by communism. The principal actors in the play imitate the appearance, ways, grimaces and voices of various animals. An ape is judge of the court, and other characters include a pig, a baboon, a turkey, dogs, cats, etc.

* * *

Amazing Stories is the title of a new fiction magazine which calls itself a periodical of "scientification." This, an introductory editorial explains, means that the type of story published will always be apparently scientifically plausible, like those of Jules Verne, H. G. Wells, Poe, etc. The April issue contains stories by all these authors, and others by G. Peyton Wertenbaker, George Allen England, and Austin Hall—all real "thrillers" for those who like that kind of tale.

* * *

Interesting articles in the issue of the *Nation's Health* for February include Knowledge of Cancer Increases, by Dr. Francis Carter Wood, and Good Seating Lessens Fatigue and Increases Output.

* * *

The U. S. Children's Bureau has recently issued as Publication No. 148 a legal report on Adoption Laws in the United States, compiled by Emelyn Foster Peck.

* * *

How Can the Chances of Curing Cancer Be Increased? is the title of an article in the February issue of the *World's Health* by Prof. G. Winter, former director of the Clinic for Women's Diseases, Koenigsberg, Prussia.

* * *

British radio regulations require that all radio talks on public health may be broadcast only by physicians whose lectures have been approved by the General Medical Council. Neglect to apply for official permission to broadcast renders the physician liable to a charge of advertising for the purpose of securing patients.

* * *

Public Health Reports for February 12th contains a report from state health officers of thirty-eight states for eleven months of 1925, compared with the same period in 1923 and 1924. The total number of cases was as follows: 1923 had 21,233 cases; 1924 had 43,029 cases; 1925 had 31,037 cases. The increase in 1924 amounted to one hundred and three per cent.; the decrease in 1925 was twenty-eight per cent. The figures for 1925 are forty-six per cent. higher than those for 1923. This is rather bitter evidence that we have been boasting perhaps too confidently of the conquest of modern medical science over epidemic diseases.

* * *

The U. S. Department of Agriculture has issued as Miscellaneous Circular No. 49 a useful little pamphlet entitled a *Guide to Good Meals for the Junior Homemaker*. The information contained includes the five food groups and their characteristics, calories, planning meals, weight and height tables for boys and girls, and other useful facts.

* * *

Kipling's jungle was reproduced in miniature recently in Minden, Germany. A sudden flood of the River Wehr cut off a fox, two hares, and seven rabbits on a little island, says a dispatch to the *New York Times*. The water rose until the island was reduced to the top of a pile of beetroots on which the ten animals had scarcely room to turn. From the nearby village people watched, expecting to see hungry Reynard make a meal of one of the rabbits. But, as in the case of the jungle drought, the animals made a truce in the face of danger. For three days and three nights the hungry fox shared his narrow bed with his companions, even though the latter had been able to nibble the beets and did not share his pangs. On the fourth day the peasants shoved out a boat to rescue the marooned beasts, but Reynard preferred death to capture.

* * *

The *Monthly Labor Review* for March contains two valuable contributions to the subject of accident prevention, namely, the special article entitled Progress in Accident Prevention, by Lewis A. De Blois, manager of the safety and compensation division of the E. I. Du Pont de Nemours Company, and former president of the National Safety Council; and the Importance of a Safety Conscience in Accident Prevention, abstracted from an address by John F. Tinsley before a joint meeting of the Industrial Safety School and the Industrial Club of the Providence Safety Council.

* * *

The El Paso County Medical Society is publishing a series of informative articles, in regular paid space, in the papers of that city. Three which recently appeared are: What the Physician Has Done for Humanity, Disease and Its Prevention, and What Does Your Physician Know.

* * *

The Hospital Information Bureau of the United Hospital Fund of New York, with offices in the Academy of Medicine, has prepared a very useful directory of convalescent homes of New York and vicinity. This gives complete information regarding type of patients accepted and other necessary data.

Abstracts from Current Literature

CARDIOVASCULAR DISORDERS

Preoperative Treatment of the Heart with Digitalis.—Erich Meyer and Albert Reinhold (*Klinische Wochenschrift,* October 8, 1925) found that both dogs and men possess an individual susceptibility to digitalis, varying exceedingly. It is a well known fact that serious and protracted cardiac irregularities may lead to circulatory insuffciency even with hearts anatomically absolutely healthy, and therein lies the danger of digitalization before laparotomies.

It is asserted by some that the heart needs strengthening by the prophylactic use of digitalis because of the dangers from the operation or anesthesia, or both. But it is generally admitted that a normal heart cannot be made to act beyond its optimal power, and therefore the prophylactic digitalization has no place in the preoperative treatment in the presence of a normal heart; it may even be dangerous.

Conditions are different, however, when the heart is known to be diseased, in which case a more or less prolonged course of treatment before the operation is frequently necessary. The dose must be arranged individually according to the condition and the manner of reaction. Attention is called to the difficulty of determining the dose in the disturbances of cardiac conduction, which can be favorably influenced by very minute doses of digitalis in combination with atropine and physostigmine. It should be remembered that hypertrophic hearts bear digitalis very well even in the presence of a high blood pressure, and that with overdistention of the right heart with an occasional auricular extrasystole the dose of digitalis should be small, so as to avoid the danger of a resulting auricular flutter. But all of these matters require a preparation of the heart by a cardiologist, and interest the internist more than the surgeon.

Angina Pectoris: Its Mechanism and Treatment.—According to William D. Reid (*Boston Medical and Surgical Journal,* January 28, 1926) the treatment of angina pectoris has for its objectives the relief of the attack and the prevention of the recurrence.

For the attack a rapidly acting vasodilator has been found most useful. Nitroglycerine, in the author's experience, is the most satisfactory drug. It is given preferably in the form of a soft tablet containing 0.006 gm., and allowed to dissolve under the tip of the tongue. By this method it is absorbed directly into certain veins and passes into the general circulation without having to go through the capillary system of the liver; its action should be obtained in about three to five minutes. A second tablet may be given in ten minutes, if needed. In some instances a favorable effect is not achieved unless a much larger dose is used; the administration of the drug should be pushed until the anginal attack is relieved or evidence is obtained of beginning toxic effect. The inhalation of the fumes of amyl nitrite in the form of a "pearl" containing 0.3 c.c. and freshly crushed in a handkerchief, is preferred by some patients. It has been pointed out that in the administration of amyl nitrite the initial fall of the blood pressure is sometimes followed by a temporary rise to a point higher than that obtaining before the use of the drug. Because of the possibility of this sharp rise in the blood pressure some physicians prefer not to employ amyl nitrite in cases of chronic arterial hypertension.

Morphine, 0.01 to 0.015 gm. by subcutaneous injection, works well and has the added benefit of assuring a quiet patient for several hours. In true angina pectoris the use of morphine may well be restricted to this second effect, namely, that of quieting the patient, and for this purpose its oral administration is satisfactory. Many cases may be well handled without the resort to narcotic medication. Where morphine is really needed is in the treatment of continuous pain such as is met in some cases of coronary infarction, in which experience shows that drugs of the vasodilator class are but partially successful.

Heat in the form of an electric pad, or hot water bag, may be applied to the precordium in severe cases, some patients, however, are intolerant to any pressure in that region. The patient ought, ideally, to be kept at rest until one or two days have passed in which no anginal attacks have occurred, as it is known that the paroxysms tend to occur in cycles and the attack may be repeated. The author does not believe anything is gained by keeping these patients in bed for long periods solely because of the angina pectoris, provided the attacks have ceased; prolonged restriction of the elderly to bed is harmful in the loss of muscular strength and the very definite danger of hypostatic pneumonia. As it is only occasionally that the physician is present at the time of the anginal seizure, the patient or a member of the family should be carefully instructed in the treatment of the acute attacks.

Between attacks measures should be taken to prevent their repetition. Success is most likely to be achieved if the therapy is directed along two main channels.

1. Predisposing conditions. These should be detailed to the patient so that, if possible, they may be avoided. Conditions which are prone to be followed by attacks of angina pectoris are: Exertion, especially if sudden, or severe excitement, worry, chilling of the skin such as getting in between cold sheets, walking against a cold wind, sexual intercourse, straining at stool, late suppers, large meals, and flatulency.

2. Treatment of the underlying disease of the heart. To accomplish this therapeutic objective it is necessary to carry the diagnosis to a recognition, wherever possible, of the type of heart affection with which the anginal syndrome is associated.

Surgical Treatment of Mitral Stenosis.—H. S. Souttar (*British Medical Journal,* October 3, 1925) describes, what he believes to be, the first occasion upon which an attempt has been made to reach the mitral valve in the human being, or to subject the interior of the heart to digital examination.

Under intratracheal anesthesia, a curved incision was made along the fourth left intercostal space, up along the middle of the sternum, and outward along the first left intercostal space. The skin and subcutaneous tissues, with the left breast, were turned outward, exposing an area of the chest wall about five inches square. On the outer side of this area a short horizontal incision was made along each of the three ribs exposed, and through these incisions the ribs were in turn divided. The chest wall was now divided a little within the line of the original incision by cutting through the muscles and costal cartilages, and the flap so formed was turned outward, the pleura being included in the flap.

A very full exposure of the left side of the pericardium was thus obtained, while with an intratracheal pressure of 15 mm. Hg there was only moderate collapse of the left lung. The action of the heart then became extremely hurried, but after a wait of five minutes it again became slower and steadier. The pericardium was opened by a vertical incision three inches long, in the centre of which the left auricular appendage came prominently forward. Two sutures were passed through the upper and lower margins of the appendage, so that it could be readily drawn forward. As the heart was still beating very rapidly a subcutaneous injection of one one hundredth grain of strophanthine was given. After a delay of ten minutes, the auricular appendage was drawn forward, a soft curved clamp was applied to its base and it was incised in an anteroposterior direction with scissors. Into this opening the left forefinger was inserted, the clamp withdrawn, and the appendage was drawn over the finger like a glove by means of the sutures. The whole of the inside of the left auricle could now be explored with facility. It was immediately evident from the rush of the blood against the finger that gross regurgitation was taking place. The finger was passed into the ventricle through the orifice of the mitral valve without encountering resistance, and the cusps of the valve could easily be felt and their condition estimated.

The finger was kept in the auricle for perhaps two minutes, and as long as it remained in the auricle it appeared to produce no effect upon the heart beat or the pulse. The moment, however, that it was passed into the orifice of the mitral valve the blood pressure fell to zero, although even then no change in the cardiac rhythm could be detected. With a little manipulation the tip of the appendage was then grasped between the finger and thumb, which held it securely closed while an assistant passed a silk ligature round it and tied it off. The pericardium was closed and a certain amount

of blood, which had escaped into the pleural cavity, was sponged out. The intratracheal pressure was raised so as to cause the left lung to expand, and the wound was closed in layers, the ribs being accurately sutured in position. Immediately the chest was closed the heart's action returned to normal, and on the conclusion of the operation the general condition of the patient was indistinguishable from that at the beginning. The patient made an uneventful recovery.

The value of the operation cannot possibly be judged on a single case, but the author claims to have shown that the method is practicable and reasonably safe. It was intended to divide the aortic cusp by passing a thin hernia bistoury along the finger and thus to relieve the stenosis, and this could have been done with perfect facility had it been considered advisable.

The author believes that the method of digital exploration through the auricular appendage cannot be surpassed for simplicity and directness. Not only is the mitral orifice directly to hand, but the aortic valve itself is almost certainly within reach, through the mitral orifice. Owing to the simplicity of the structures, and, oddly enough, to their constant and regular movement, the information given by the finger is exceedingly clear, and personally the author felt an appreciation of the mechanical reality of stenosis and regurgitation which he never before possessed.

Acute Obstruction of the Coronary Artery.—James B. Herrick (*Northwest Medicine,* December, 1925) says that treatment should be directed toward conserving the heart's strength in every way possible and in prolonging the time of rest until danger from rupture of the heart, acute dilatation, etc., seems well over. Not a few errors have undoubtedly been made in regarding some of these cases as simply gastric upsets and permitting the patient to begin to move about too soon.

Rest in bed should be strictly enforced. The patient should have his choice as to position in bed, sitting up or lying down. Exceptionally he may have to be allowed to spend his days and nights in the chair. Diet should be light and food producing gas should be avoided. Enemata or cathartics should be given to induce easy stools and to avoid straining.

Morphine may be necessary for the pain. At times this has to be repeated and in fairly large doses. Heat to the chest or sinapism are advised by some. Their value is doubtful.

With the feeble, often irregular, heart digitalis should be given. So far as he knows, the author says no case of rupture of the heart or other untoward accident due to the use of digitalis in this condition has been reported. It strengthens the heart action and presumably improves coronary circulation. And it is largely on the establishment of an efficient collateral circulation that hope of recovery rests. Stimulants, such as camphorated oil, caffeine or strychnine, also have a place and should be employed when heart failure seems threatening.

The Neurological Mechanism of Angina Pectoris and Its Relation to Surgical Therapy.—Wilder Penfield (*American Journal of the Medical Sciences,* December 1925) presents the following conclusions from a study of two patients who had been operated on to give relief from angina pectoris.

1. The removal of a sympathetic ganglion removes the possibility of angina pectoris in the motor distribution of that ganglion only.

2. Pain is still possible in the motor distribution of the remaining ganglia, provided the stimulus arising in the heart or aorta is adequate.

3. Success in the operation depends, not upon interrupting a direct afferent path from cardiac plexus to central nervous system as has been assumed, but upon the interruption of autonomic reflexes.

4. Complete cervical upper thoracic sympathectomy abolishes the pain, but should only be employed in cases where life is really insupportable even under the best medical care.

5. Removal of the superior cervical sympathetic ganglion does not render angina in the motor distribution of the other ganglia impossible. Its removal can only be justified on the basis of some resultant alteration in the coronary vessels or aorta which are innervated by it through the superior cardiac nerve.

6. Even if the operation is successful in abolishing pain, the patient should not be called cured but should still be considered as having a serious cardiac disease, and be treated accordingly.

Incidence of Arteriosclerosis in the Arteries of the Body.—D. Rutherford Dow (*British Medical Journal,* July 25, 1925) found that in any one body the distribution of arteriosclerosis was variable. Its presence in one artery was no indication that arteries in other regions would be involved. The arteries in eight bodies were examined.

The abdominal aorta, common iliac, femoral, and popliteal arteries were more frequently and more extensively affected than any other vessels in the body. The internal iliac arteries were more commonly involved than the external iliac arteries.

It was a striking fact that the mesenteric arteries were seldom the seat of degeneration. In one instance only was the inferior mesenteric artery affected.

The parietal vessels in the pelvis, specially the gluteal and pudendal arteries, were affected to a very marked degree. They offered a comparison with the visceral branches in the pelvis, which were seldom involved.

The portion of the internal carotid artery which lay in the cavernous sinus, and the part involving its bifurcation into the anterior and middle cerebral arteries, frequently presented arterial degeneration of a very advanced degree. The vessel wall in this region was usually sacculated. Compare that with the cervical portion of the internal carotid, which was subject to a very small amount of degeneration.

The vessels of the lower limb were more frequently and more extensively affected with arteriosclerosis than those of the upper limb. In one specimen only was the axillary artery markedly involved, and only in one brachial artery was a small patch of degeneration present. A very different condition was found in arteries of approximately the same calibre in the lower limb, where the femoral and popliteal arteries were extensively affected.

The radial arteries (when involved) showed degenerative changes just above the wrist joint, but were not affected higher up.

The tricuspid valve and pulmonary artery were not implicated in any of the speciments examined. They offer a striking comparison with the mitral valve and thoracic aorta, both of which were found to be a frequent site of degeneration.

Liver Disease Caused by Heart Defects.—Harlow Brooks (*Medical Clinics of North America,* September, 1925) states that extensive and serious disease of the liver develops as a result of defective heart action, not only in chronic diseases, but in many acute ones also. It is quite frequently seen in cases of convalescent scarlet fever or pneumonia, after toxic myocarditis or endocarditis in tonsillitis, and especially in convalescence from influenza. Often the heart defect is occult; perhaps because the patient is in bed without being subjected to extraordinary stress, or the heart defects may be obscured by noisy breath sounds, by pericardial effusions, edematous thoracic walls; the elemental defect may be a narrowed coronary, even without the symptoms of angina. Yet in many of these very cases the cardiac defect may manifest itself chiefly or perhaps even solely by liver changes.

In all these cases the basic fault lies in a congestion of the liver due to defective action of the right heart, sometimes valvular (tricuspid disease, notably incompetence). Defective clearance of the right chambers of the heart produces immediately a damming back of the return flow from the inferior vena cava and distention of the hepatic veins and a resulting distention of the intralobular capillaries. Inevitably the pressure on the cells of the distended blood capillaries is followed by atrophy of the liver cells with irreparable damage on the liver cells, possibly death and necrosis, giving rise to brown atrophy, fatty degeneration, with profound alterations in the metabolism. At the same time great and abnormal pressure is exerted also on the bile capillaries, proper drainage is prevented, and, no doubt, proper bile secretion (or excretion?), and jaundice results. As a result of the pressure on the faultily constructed intralobular capillaries hemorrhages take place in the liver substance. The cells break down and blood detritus appears in the extravasated areas. Some of this detritus remains where it appears, some is taken up by leucocytes and fibroblasts, and some is apparently picked up by the liver cells. In either case it acts as a foreign body, and therefore as an irritant. Cell infiltration occurs, fibroblasts appear, and in the end a proliferation of the normally exceedingly delicate connective tissue stroma of the lobule takes place. More atrophy of liver cells, more pressure on bile ducts, more jaundice, and more defective

liver conditions result. If the interlobular connective tissue is thus excited to growth, subsequently to cicatrization, an interlobular cirrhosis occurs.

It is exceedingly difficult to differentiate diagnostically between liver changes caused by primary circulatory discrepancies and those other conditions which lead to the socalled essential diseases of the liver. The liver may be large or small in size, its surface may be smooth or nodular, so very much depends on the individual idiosyncrasy and reaction of the patient, on his age as well as on the duration of the process, and also the subsidiary factors concerned in the case, as gluttony, an indiscreet diet, alcohol, etc. Obviously, about the same may be said of the symptomatology. One of the most serious stumbling blocks in the recognition of liver disease due the cardiac defect is occult heart disease.

The prognosis should always be held in abeyance until the therapeutic test has been made and until we are able to say definitely that the cardiac lesion is or is not a curable one, or if the changes already present in the liver may not under favorable conditions subside.

As to treatment, it is, of course, obvious that the primary essential is to attack the primary defect—the faulty heart. In most cases this can be most essentially encompassed by rest—physical and emotional. The majority of the cases show the most strikingly good results in so far as the heart and liver are concerned, when they are put upon some form of the digitalis group of drugs. Efforts must also be directed to the elimination of all those conditions which may accelerate the liver process, such as the proper limitation of food, according to the needs of the body, the elimination of all hepatic irritants such as alcoholics, the spices and aromatics; the diet should not be too highly nitrogenous. If ascites or edema is present, the fluids and salt must also be restricted. Purgatives should be used discreetly. The salines act best. Some cases show marked benefit from the diuretics, caffeine, sodium benzoate, diuretin, theosin and arsenural. Massage, active and passive movements, may well be applied in some instances, but the cardiac defect and the heart must be watched most carefully. No overload of any kind is to be permitted, and drugs are to be used symptomatically whenever necessary.

The Present Status of the Effect of Organ Extracts on the Control of Blood Pressure.—W. J. Macdonald and T. C. Burnett (*Boston Medical and Surgical Journal,* March 4, 1926) tell us that an extract of the liver has been obtained which possesses the property of reducing to a certain extent essential arterial hypertension, and that it is quite possible that the active principle of this extract may be recovered from other body organs and tissues. This extract contains no protein, no peptone, relatively small quantities of histamine, and relatively large quantities of cholin. It is possible that the effect produced by a proper combination of these two substances may be responsible for the lowering of pressures, but it is more probable that the result is due to an unknown substance, or that this unknown substance may activate the histamine, the cholin, or both. Intramuscular injection is much more efficacious than intravenous. The extract is much more effective in hypertensive than in normal cases. We have as yet no method of selecting cases for treatment, and no method of determining the dose in units in any given case.

Periarteritis Nodosa.—George B. Gruber (*Klinische Wochenschrift,* October 8, 1925) describes the pathology of periarteritis nodosa as follows:

Periarteritis nodosa is a histologically rather sharply characterized inflammatory expression of varying infectious toxic origin, which appears in independent nodes in the mediumsized down to the smallest arterial branches. It is characterized by a warping necrosis in the medial and intimal walls of the arteries as a result of exudative processes, which penetrate from the adventitia and also to a slight extent from the lumen of the bloodvessel, toward the media and intima, and eventually by the formation of granulation tissue in the outer layers of the vessel wall; this granulation tissue, together with the subintimal increase in tissue, which should be considered as a phenomenon of accommodation, leads to the cicatrization of the periarteritic sites. Thrombosis, hemorrhage, rupture and aneurysm, destruction, and infarction in many forms are the results of the nodular inflammation of the arterial wall.

Periarteritis nodosa is not a disease entity, but a peculiar hyperergic expression of arterial wall sites that have become hypersensitive in one or many organic systems in the course of a protracted infectious, or septic disease. It is the most characteristic sign of this disease and is characterized clinically by different and not always existing symptoms as well as by associated symptoms, which have nothing to do immediately with periarteritis nodosa. Nephritis and degenerative neuritis are not infrequently associated with it, and gastric and intestinal symptoms frequently occur with the very beginning of the disease. The ending with the picture of a vascular sclerotic kidney disease is frequently observed and a pallid appearance of the patient is considered as a classical indication of the diagnosis. The duration of the disease varies between one week and several months, and the prognosis is unfavorable in spite of a few cases in which recovery has occurred. The ultimate cause of death is not always the same, and must be sought in marasmus or in anemia, sometimes in acute internal hemorrhage (brain, lungs, stomach, intestine, peritoneum, and kidneys), sometimes in peritonitis, in pulmonary edema, and uremia.

High Blood Pressure.—R. D. Rudolf (*Canadian Medical Association Journal,* November, 1925) says that a rise in arterial blood pressure may be due to nervous, toxic or organic causes. In all cases it is wise to urge a less strenuous physical and mental life, a reduction of diet, especially of the purin containing articles, and the free action of the bowels. Beyond this régime no treatment is required in the absence of symptoms. Where symptoms are present the pressure may be reduced by various measures.

Studies of the Vascular Changes in Cases of Polycythemia Vera.—George E. Brown and Herbert Z. Giffin (*American Journal of Medical Sciences,* February, 1926) studied fourteen cases of this disease with relation to the vascular readjustments to the increased volume of the circulating blood. The total volume of blood was increased in all; the average was 166 c.c. for each kilogram of body weight. The viscosity of the blood was increased in all. The hematocrit values for the cells averaged sixty-two per cent. The capillaries of the nail fold showed venous engorgement in thirteen cases, ninety-two per cent., arterial in four. Engorgement of retinal veins in nine, sixty-four per cent. Engorgement of skin capillaries and retinal veins disappeared when the total volume of blood had diminished to one hundred to 110 c.c. per kilogram. Cardiac enlargement and cardiac disease were noticeably absent. Liver was slightly enlarged in fifty-seven per cent., spleen enlarged in all. There was no increase of blood pressure and the renal function was but slightly impaired.

The Action of Nitrites Upon Pulmonary Circulation. I. Nitroglycerin.—George L. Love and Hugh McGuigan (*Journal of Laboratory and Clinical Medicine,* August, 1925) used dogs for these experiments, the results of which show that nitroglycerin in small doses often produces a rise of pulmonary pressure due to increased cardiac output from acceleration and increased venous return. Nitroglycerin reduces a high pulmonary pressure apparently by dilating the pulmonary arteries. It did not stimulate excised pulmonary arteries. Thus the action of nitroglycerin is the same upon pulmonary and systemic arteries, although less marked upon the pulmonary vessels. The action upon pulmonary pressure is, however, often counterbalanced or overbalanced by the secondary effects of its action upon the systemic vessels. The action of nitroglycerin on pulmonary circulation does not justify its administration in the treatment of pulmonary hemorrhage. Experimentally, at least, it appears to be contraindicated in hemoptysis.

II. Sodium and Amyl Nitrite—George R. Love, Hugh McGuigan, and Charles E. Wiley (*Journal of Laboratory and Clinical Medicine,* August, 1925) found that amyl nitrite and sodium nitrite, particularly the latter, often raise the pulmonary pressure in dogs, due to an augmented cardiac output from increased venous return and cardiac acceleration. Large doses of sodium nitrite often produce a rise of both carotid and pulmonary pressures with cardiac irregularities, which sometimes terminate in ventricular fibrillation. On excised pulmonary arteries, amyl nitrite and small doses of sodium nitrite produce relaxation. Large doses of sodium nitrite cause a contraction of these vessels, which is suggested is caused by irritation and not true stimulation. The action of amyl and sodium nitrite upon the pulmonary arteries is the same, though less marked, as upon the systemic vessels; however, the effect upon pulmonary pressure is often counterbalanced or overbalanced by the secondary effects of the action upon the systemic circulation.

DIABETES

Benign Glycosuria and Diabetes Mellitus.—J. E. Holst (*Acta medica Scandinavica,* December 4, 1925) by seeking information about the subsequent history of a series of individuals in whom glycosuria was previously demonstrated, attempts to obtain knowledge empirically of the frequency with which the nondiabetic glycosurias occur and the factors which can be used as the basis of an early diagnosis and prognosis in a case of glycosuria. The investigation comprises 352 patients in whom during the years 1907-1918 sugar was demonstrated in the urine. Of these 194 were of the author's own material, who, applying for life insurance in Copenhagen were rejected on account of glycosuria. The other 158 were hospital patients. In 163 of these the subsequent history was traced and in only thirty per cent. could diabetes mellitus be demonstrated after an observation period which for the majority of cases lasted from five to sixteen years, while in the remainder the glycosuria must be regarded as nondiabetic. The author summarizes his conclusions as follows:

Cases of diabetes mellitus discovered by chance often have a particularly favorable course.

The nondiabetic glycosurias can be divided into three main groups: Glycosuria with cyclic hyperglycemia, renal glycosurias and transition cases.

The older function tests for glycosuria (tests for alimentary glycosuria *e saccharo* and *ex amylo*) are useless, as they do not distinguish between the nondiabetic glycosurias and incipient diabetes mellitus. A blood sugar examination should be made in every case of glycosuria which is not of a purely transitory nature.

Glycosurias with normal fasting blood sugar all have a benign course without respect to type. Determination of the fasting blood sugar is therefore sufficient for diagnosis and prognosis and no practical importance can be ascribed to the function tests for differentiating the various types.

Diabetes and Pregnancy.—A. Springer (*Wiener klinische Wochenschrift,* October 8, 1925) calls attention to the close relationship between diabetes in the mother and the giant growth of the fetus, and warns the general practitioner that in the presence of a proved diabetes in the mother it should be borne in mind that the fetus may become unusually large, and that labor should be induced at a time when the mother may be delivered without causing undue difficulties because of the large size of the child. Even though such a procedure, as experience shows, offers the child a reduced chance, nevertheless the course of the labor for the mother will be made much easier, and otherwise, the fate of the child is sealed anyway. If labor is not induced early a Cæsarean section may have to be done, which also gives poor results in the presence of diabetes. On the other hand, when a giant fetus is believed to exist, it is well to think of diabetes in the mother, and the urine should be examined frequently during the puerperium even in the face of a negative finding, inasmuch as diabetes may become manifest only after some time following the delivery.

Most authors are agreed that the breadth of the shoulders of the fetus is the chief cause of the difficult delivery. The delivery of one or both arms is almost always necessary, and sometimes cleidotomy must be done. Occasionally a Cæsarean section may be necessary even if the fetus is dead.

Diabetes and Commonsense.—George L. Servoss (*Western Medical Times,* January, 1926) says that no other disease requires more commonsense in its handling than does diabetes. Today there is nothing about it that should even startle us. If we cannot accomplish our ends with proper diet we may resort to insulin. In the past diabetics, and many of them, lived out their full score of years. With the advent of insulin and a better understanding of the disease, still more should live in comfort to a good age, and in apparently perfect health. A diabetic properly handled need not be a morose individual. His wants are supplied. Of course he cannot take extensive carbohydrate or fat excursions and his proteins may be cut down some, but he will enjoy a rather generous diet and will get as much enjoyment out of life as does the individual whose islands of Langerhans are all intact and functioning. Remember that diet is just as important as ever and just because your patient is taking insulin, don't tell him he can increase the dose a bit and eat more. That may be his undoing, for overeating even in the face of insulin, may be followed by acidosis or other complications, or may call for subsequent insulin increase; quite the reverse of what is desired. "Safety first" is the cardinal rule in the treatment of every case of diabetes and he who is conservative and uses commonsense will go a long way toward an ultimate success. The study of diabetes is no trifling affair, nor is that of insulin therapy and he who employs the agent with little or no study, or he who knows little or nothing of the proper dietary treatment of the disease, would better make no effort to treat a single patient so afflicted. This has been agreed upon by all the authorities. So, if you have not a full comprehension of diabetes and its proper treatment, do not attempt its care, for if you do you will be unfair to yourself and patient alike, and will be very liable to meet with absolute failure. With diabetes, more than with probably anything else in the whole art of medicine, does "those who know" succeed, or "where those who know not" fail.

Diabetes.—I. C. Brill (*Northwest Medicine,* November, 1925) says that aside from its historic interest, starvation no longer has a place in the therapeutics of diabetes. Its sole function (rendering an obstinate case sugar free) is now more easily and far more profitably accomplished by the use of insulin. The principle of undernutrition, however, is just as valuable today as it was at its first introduction by Dr. Allen ten years ago. But, like other therapeutic measures, its greatest usefulness is realized only when employed upon proper indications. It has already been pointed out that diabetes patients may be divided roughly into two groups: the undernourished, and the obese. In the former group are included most of the cases of diabetes in the young, especially children. The latter group is composed largely of patients at middle age or over, with a tendency to a mild and chronic course. It is in this group of patients that a subbasal diet leading to a moderate degree of undernutrition brings the best results. In this type of patients practically complete cure may in some instances be obtained by dietary measures alone, by a judicious application of the principle of undernutrition. On the other hand, in the young and already undernourished patient the prolonged application of the principle of undernutrition is apt to lead to disastrous results.

The maintenance diet is the ultimate goal in all cases of diabetes. In the undernourished group and in practically all cases of juvenile diabetes the maintenance diet must be instituted from the beginning, the process of desugarization being accomplished by the use of insulin, rather than by further increasing the state of undernutrition. The maintenance diet in any given case is determined at the outset by estimating the patient's basal caloric requirement and adding to it twenty to thirty per cent. of the total calories, depending upon the patient's activities. The number of grams of protein in the diet is determined by the patient's weight (from two thirds to one gram of protein to the kilogram of body weight for the adult patient, and from one and one half to two grams of protein to the kilogram of body weight for children). The number of grams of fat and of carbohydrates are determined by the Woodyat method. The inability to administer such a maintenance diet to a diabtic of the undernourished group, or to any diabetic at the end of the course of treatment without causing glycosuria constitutes a rational indication for the use of insulin.

The Effect of the Injection of Heavy Metals on Diabetes Mellitus.—In their experiments with heavy metals in diabetes mellitus, Erich Schilling and Rudolph Arnold (*Klinische Wochenschrift,* September 17, 1925) found that the effect on the acidosis was not always the same: in individual cases both the acetone and the sugar disappeared promptly from the urine; in some cases, on the other hand, there was no effect on the acidosis. In cases without acidosis, the effect upon the clinical picture was evident: with the reduction of the blood sugar content, the amount of sugar in the urine was also reduced. In the less severe cases the urine became absolutely sugar free and remained so for two or three days, but the amount of sugar in the urine gradually returned to the former amount. In these experiments the dietary of the patients was not changed. The value of these findings should not be overestimated, as the effect of the injection of heavy metals (preparations of iron, mercury, silver and bismuth) in some cases was purely symptomatic; furthermore, these injections cannot be kept up indefinitely. Nevertheless, these findings are very interesting from the theoretical viewpoint, and in suitable cases these injections served a good purpose.

A Clinical Study of Diabetic Coma.—W. W. Payne and E. P. Poulton (*Lancet*, September 26, 1925), from a study of eleven cases and a review of the current literature, conclude that a definite renal element as shown by oliguria, albuminuria, and urea retention and failure to excrete ketone bodies, and occasionally sugar, is present. In some cases this renal failure is so decided as to cause a marked resemblance to uremic coma.

The cause of the renal failure is by no means clear. It is usually considered that the kidney, in common with other organs, is poisoned by the ketone bodies, and in particular by the diacetic acid. While this poisonous action undoubtedly exists it does not explain why a kidney which has for a long time successfully dealt with large quantities of ketone bodies suddenly fails and permits them to accumulate. Other possibilities must therefore be considered. There are several.

1. The poisonous action exerted by the excess of sugar in the blood.
2. Other toxins may be formed. There is, however, very little evidence of them.
3. The ketone bodies may poison the heart muscle and the circulatory failure may cause renal failure with oliguria and further accumulation of poisons.
4. The preceding polyuria noted in many cases, or the vomiting in others, may completely deplete the water reservoirs of the patient, the kidney thus becoming unable to excrete the poisonous ketone bodies owing to lack of the necessary water.
5. The ketone bodies may be produced so very rapidly that the kidney is unable to cope with them.

The last three factors probably account together or separately for the majority of cases of coma, and also for the different types of cases.

All the cases of diabetic coma reported were young subjects. With efficient insulin treatment the most important cause of death at the present day would appear to be renal failure, as indicated by prolonged oliguria, high blood urea, and the excretion of mere traces of sugar or acetone bodies in the urine. Albuminuria is practically always present and so will not influence the prognosis. After recovery from coma there is no tendency to relapse into coma provided insulin treatment is continued. The ultimate severity of the case, as judged by the amount of insulin required, depends largely on the length of time the patient has had diabetes, if insulin has not been given previous to the coma, because the disease is naturally progressive in young subjects. It is obvious, therefore, that some cases of diabetic coma closely resemble uremic coma.

The occurrence of diabetic coma should be prevented as far as possible by, 1, not stopping the use of insulin suddenly, and 2, the prevention of acute infections, such as sore throat, cold, chill, or temperature, by the wearing of face masks, paraffin and vaseline treatment, prophylactic vaccinations, etc. If infection occurs the insulin must be continued, and if glycosuria and ketosis supervene the dose should be increased and extra carbohydrates should be given for the time being. The bowels should be kept open and plenty of fluid should be taken by the mouth.

The treatment consists in massive doses of insulin twenty to forty units every four hours, and at the beginning an intravenous injection of ten to twenty units may be given if the case is urgent. Large volumes of fluid are necessary to keep up the flow of urine. If the patient cannot take one pint of fluid every hour by mouth, it should be passed directly into the stomach or duodenum through a nasal or Einhorn tube, with the patient lying on the right side. The fluid should be isotonic, sugar, sodium bicarbonate, and a little salt being dissolved in tap water. The bases of the lungs should be watched to see that edema does not develop. The rapidity with which energetic treatment with insulin may cause diabetic coma to pass into hypoglycemic coma without the patient recovering consciousness should be borne in mind.

Diabetic Treatment Simplified.—Frank C. Eve (*British Medical Journal*, June 6, 1925) states that the treatment of diabetes has now become very complicated, and there is a real danger of the main issues becoming fogged in a cloud of bewildering details. The main issues are: 1, the quantity of sugar excreted day by day; 2, the presence or absence of ketones; 3, treatment by regulating the quantity of the diet, or by giving insulin if dietetics prove inadequate; 4, the blood sugar (in special cases). The main practical points regarding insulin are:

1. Insulin is something which somehow enables a diabetic to burn up sugar like a normal person, but does not enable him to store it as glycogen.
2. Insulin can in this way cause the blood sugar to sink to a dangerously low level (hypoglycemia). This can be avoided if the patient always carries about with him eight large lumps of sugar and promptly eats them all if he feels queer after an injection of insulin. Eight average lumps of sugar acts as an antidote to fifteen units of insulin.
3. Insulin is given two or three times a day, just before a chief meal, which if possible should contain one ounce of bread; ten to fifty units daily as the usual range of dose; more is seldom useful.
4. The patient can be taught to inject in into a pinched up skin of the thigh, under weekly supervision.
5. Insulin has to be acid; in a few subjects this causes painful lumps. It is said that neutralization in the syringe by sterile sodium bicarbonate solution of proper strength prevents this irritation and does not impair the action of the insulin.
6. Blood tests with insulin are rarely helpful, for the blood sugar cannot be kept normal in private practice.
7. The risk of giving insulin in unsuitable cases will be practically eliminated without blood tests, a, if you first try to cure all cases by diet alone; b, if ketones are present, and abundant sugar, insulin is surely needed; 3, leaky kidneys (renal glycosuria) are a real but uncommon danger. These cases may be recognized by their uncanny failure to improve with diet, by their good health, by the absence of ketones, and by the absence of glycosuria three hours after a good starchy meal. A blood sugar will decide the matter by showing a low renal threshold for sugar.
8. If in an emergency there is fear of causing hypoglycemia, the insulin may be guarded with sugar, as mentioned above.

In coma, the treatment must be drastic and intravenous injections are needed, starting with twenty to forty units of insulin, forty to eighty grams of glucose in 800 to 1600 c. c. of water. Then you must feel your way by results, but eighty to one hundred units or even more may be needed in the first day. Croton oil, strychnine, and camphor will also probably be indicated.

Exercise in moderation is important in diabetes to help the combustion of sugar to carbonic acid. Bed rest should be prescribed only during starvation or illness.

SYPHILIS

Observations on Congenital Syphilis.—Philip Haskell Sylvester (*Boston Medical and Surgical Journal*, August 27, 1925) gives the following program of treatment.

We give sulpharsphenamine intramuscularly to very young or very small babies, in a dose of g.05, g.075, or even g.1, according to size and weight of the baby, for three doses, then increase by g.05 in each succeeding series of three doses until the baby has received a total of twelve doses at weekly interval. At the end of this first series, the baby is given a vacation of one month, when it returns for Wassermann. If negative, as it usually is, the baby is given a second series of twelve injections, each of about one half the corresponding dose of the previous series, when another month's vacation is given and a Wassermann taken. If this is negative (as it has never failed to be in this group), the baby returns for blood test alone at the increasing interval of three months, six months and one year. In this group of young babies, all those who have once become negative have remained so to date. A small baby critically ill with syphilis, or a syphilitic baby critically ill with anything else, or in a state of severe malnutrition, is treated by mercury alone in inunctions or by a constantly applied binder, until its general condition has been improved to a reasonable degree. Then it is given sulpharsphenamine in very small doses (g.05 to g.075) at weekly or fortnightly intervals, meanwhile continuing the mercury. When in really good condition, the full course of twelve injections is given as above. In older children, the dose is started at g.2 and is rapidly run up to g.4 for a total of twelve weekly injections and the series repeated with a vacation of one month at the end of each series until the Wassermann becomes negative. So far we have had no general reactions, whatever, and no local reactions worth mentioning. To one who has seen the severe general reactions following the intravenous use of neoarsphenamine, and who has been through the shrieking bedlam of a clinic where

it was being given intramuscularly, the peace, quiet, and friendly atmosphere of the sulpharsphenamine clinic are very pleasing. It is my hope and belief that the ease of preparation; simplicity and painlessness of administration; and absolute freedom from severe reaction, will make the comfortable and effective treatment of congenital syphilis possible and convenient in the hands of every general practitioner.

In the presence of certain well known conditions, intravenous arsenic in any form may produce severe crippling and often fatal reactions, and must not be given if these conditions are present: 1. In grave malnutrition from any cause, even syphilis. 2. In any severe infection, particularly of the lungs, as pneumonia or severe bronchitis. 3. In high fever from any cause. 4. In the presence of acute meningeal symptoms. 5. In nephritis.

While neoarsphenamine may be safely given intramuscularly in small doses, under any of the above circumstances, it is probable that the rapid absorption of sulpharsphenamine makes its intramuscular administration just as dangerous as when given intravenously.

Syphilis of Aorta and Heart.—William D. Smith (*Boston Medical and Surgical Journal,* August 27, 1925) says with regard to the treatment of this disease that treatment of aortic and cardiac syphilis should always be begun with mercury and potassium iodide and only after some weeks of such preliminary treatment and a careful consideration of the clinical picture, should arphenamine be used and the initial dose smaller than that generally given, not more than 0.05 gm. to 0.1 gm. of diarsenal gradually increased to not more than 0.3 gm. or the corresponding amounts of neoarsphenamine. If tolerated, then repeated courses should be given as in the treatment of syphilis generally.

Arsenic is a dangerous drug to begin treatment for cardiovascular syphilis and the danger increases in relation to the size of the dose and to the organic changes present in the aorta and heart.

In the management of such cases so many factors are involved, such as the age of the patient, condition of the kidneys, degree of arteriosclerosis, presence or absence of decompensation, etc., that no definite routine can be laid down or followed and the type and intensity of treatment must be determined by the experience and judgment of the clinician. In cases with marked renal insufficiency, arsphenamine may be a safer drug than mercury.

In the treatment of syphilis, we should not forget that the patient has a damaged heart and that the general management of the case in regard to rest, avoidance of strain, digitalis, etc., may be as important in determining the duration of life as the treatment of the syphilis itself.

Occasionally a case may be seen in such desperate condition and with such clearcut indication for treatment that one is justified in instituting the most intensive treatment including arsenic from the start in the hope of correcting a pathology which if it persists, means the speedy death of the patient.

In general, the author says he has become sceptical of striking benefit from arsphenamine when the patient shows no symptomatic improvement from mercury and iodide, but, none the less, such a case should be given the benefit of arsenic therapy, and occasionally, in spite of the failure of the older drugs, improvement occurs.

Interstitial Keratitis.—Maud Carvill and George S. Derby (*Boston Medical and Surgical Journal,* August 27, 1925) have tried to ascertain how much may be accomplished by thorough antisyphilitic treatment in cases of interstitial keratitis. Opportunity was afforded by the fact that since 1910 the antisyphilitic treatment was placed in the hands of a special clinic and a special worker was detailed from the social service department to follow up the cases. Comparison is made between the results in one hundred cases prior to that date, in which the antisyphilitic treatment was desultory, and 222 cases since that date, the former known as untreated, the latter as treated. In seventy-four per cent. of the treated cases the vision of the better eye was 20/30 or better, while in the untreated only thirty-eight per cent. attained a similar amount of vision. In the treated only one per cent. was below 20/100; in the untreated fourteen or fifteen per cent. show 20/100 vision or less. The figures seem to show that intensive antisyphilitic treatment exerts some influence in preventing the involvement of the second eye, or in making the attack in it less severe. It also seems to have a striking effect in preventing recurrences.

Value of Specific Treatment in Cardiovascular Syphilis.—Bernard I. Goldberg (*Boston Medical and Surgical Journal,* October 22, 1925) says that a greater percentage of subjects have cardiovascular syphilis than has been believed, and that a negative Wassermann does not exclude its presence as this test has proved negative in an appreciable number. These cases should be subjected to a definite and persistent course of combined antisyphilitic treatment, arsphenamine, or allied arsenicals, in the early cases, arsphenamine and mercury in the advanced ones. More caution is required in those more or less advanced, but, whenever possible, arsenicals should be given as such treatment is by far the most effective. Antisyphilitic treatment has been proved to have resulted in the amelioration of symptoms.

Effect of Heat on Heart Extract Used as Antigen in Wassermann Test for Syphilis.—S. L. Leiboff (*Journal of Laboratory and Clinical Medicine,* November, 1925), found that the beef heart used in the preparation of antigen for the Wassermann test may be boiled or even heated in the autoclave under fifteen pounds pressure for an hour without impairing the antigen obtained by extraction with alcohol. The meat may be extracted with hot alcohol without injury to the antigen. A method is recommended for preparing an antigen at high temperatures.

Prolonged, Curable Albuminuria in Syphilis.—C. Laurent (*Presse Médicale,* May 30, 1925), among 500 syphilitic patients whose urine had been examined at each visit, found fifteen of prolonged, curable albuminuria. The initial lesion dated back from one to fifteen years. In some instances rather vigorous treatment had been given. The arsenicals do not act as promptly as usual on these albuminuric cases, most of the author's cases requiring three to five courses of arsenical injections to clear up the albuminuria. All but one of the fifteen cases were free of all other evidence of nephritis such as edema, casts, polyuria, and headache. Yet the albuminuria sometimes reached twelve or fifteen grams per litre. Diet had no effect on the albuminuria, which gradually subsided under antisyphilitic treatment. The duration of the albuminuria ranged from two and a half months to seven years. Several cases were kept under observation for two years after evidence of the albuminuria, and none of them relapsed. The condition would appear to be pathologically a syphilitic nephritis, but not clinically, since there is a characteristic absence of the clinical evidences usual in nephritis. Antisyphilitic treatment should be tried out persistently in all obscure albuminurias uninfluenced by diet or other ordinary treatments.

The Vernes Test for the Diagnosis of Syphilis.—Leon H. Cornwall (*Journal of Laboratory and Clinical Medicine,* July, 1925) has collected the records of the Vernes and Wassermann tests on 1466 blood sera and spinal fluids in order to make a comparative study of the relative interpretative value of the two procedures, rather than a mere numerical comparison of their results. This comparison shows that the Vernes reaction is a valuable addition to the serological procedures for the diagnosis of syphilis, especially useful in determining the effect of therapy. Successive results illustrate graphically whether the infection is progressing, remaining stationary, or regressing.

Further Observations on the Possibility of Cure of Syphilis in the Rabbit with Arsphenamine.—Alan M. Chesney and Jarold E. Kemp (*Journal of Experimental Medicine,* July, 1925) found that rabbits treated with arsphenamine early in the course of the experimental infection, from forty-nine to fifty days after inoculation, were rendered free of popliteal lymph node infection and were found to be uniformly susceptible to a second infection. Rabbits treated late in the course of the disease, 181 to 291 days after inoculation, were rendered free of lymph node infection but were refractory to a second infection in seventy-five per cent. of the cases. Untreated syphilitic rabbits were found to exhibit lymph node infection 265 to 420 days after inoculation and to be uniformly refractory to a second infection. In animals treated either early or late in the course of the infection but not reinoculated, lymph nodes were found to be sterile as late as 275 days after the last dose of arsphenamine. The authors suggest that the refractory state in rabbits may be explained by the existence of an acquired immunity which persists after the abolition of the disease, rather than to the persistence of the first infection. It would appear that it is possible under certain conditions to reinoculate rabbits and produce generalized infection without producing any lesion at the portal of entry.

A Microreaction for Syphilis.—Meinicke (*Monatsschrift für Kinderheilkunde,* January-February, 1925) describes the technic of his microreaction for syphilis in the following manner:

The blood specimen is obtained in the usual way. It is allowed to flow into a capillary tube which is sealed at one end. The tube is then allowed to lie horizontally for several hours or until the next day, when it is placed in a centrifuge tube with its sealed end downward for centrifugalization. In this way the blood clot sinks in the tube, covered by clear serum. The tube is broken within the area of the serum which is then blown out on a glass slide. The author has two glass tubes, one containing one c.c. of his balsam extract, and the other containing ten c.c. of a three per cent. sodium chloride solution, and both are heated to 45° C. The salt solution and the extract are then mixed by pouring them back and forth three times. The dilution of the extract is put into a cup, from which a drop is taken with a large loop and carried to a glass slide. With a small loop, a drop of serum is taken and rubbed up in the large drop of the extract dilution. When the mixture is thoroughly mixed, it is covered with a cover glass and the reaction is completed.

The specimen is allowed to lie at room temperature for one hour, after which the edge of the cover glass is smeared with warm vaseline. The observation of the reaction is made in the dark field. Negative reactions show a grayish base, upon which minute light points are seen in a most lively motion. These minute points are very close together and cover the field uniformly. Marked positive reactions show a deep black base, without the minute dancing points, but with thick, highly refractile starshaped clumps in agglutination. Weakly positive reactions show uniformly spread, smaller starshaped clumps, and between them a greater or smaller number of dancing tiny points.

This microreaction is exceedingly simple and, according to the author's claims, just as reliable as the macroreaction, that is, his clouding reaction.

Comparative Tests With the Wassermann Reaction, the Precipitation Reactions of Sachs-Georgi and Dold, and the Meinicke Precipitation Reaction.—As a result of the comparative tests on more than five thousand sera, that were carried out with the Wassermann reaction and the Sachs-Georgi reaction, and also with the Wassermann, Dold and Sachs-Georgi reactions, and with the Wassermann, Meinicke and Sachs-Georgi precipitation reactions, respectively, and with all four reactions, the following conclusions are drawn by Clara Schuler (*Schweizerische medizinische Wochenschrift,* October 1, 1925):

The method of Bordet-Wassermann gives the greatest number of positive results in cases of certain syphilis and at the same time the least number of nonspecific reactions in control cases. The most favorable results with the precipitation methods (the sigma reaction was not tried) were obtained with the Sachs-Georgi method. In agreement with other investigators, it was found that at the present time it is the best method of control for the Wassermann reaction. The Sachs-Georgi test sometimes gives nonspecific results in tuberculosis, arthritides and enteritides, but far less frequently than the two other methods. These only have the questionable advantage of early reading. However, the test is not very easy in both reactions even for the experienced worker; in questionable positive cases it may even provide great difficulties. These methods cannot be left to the general practitioner.

In regard to the question, as to which of the individual methods is the most useful to the general practitioner, the carrying out of any one of these procedures outside of the laboratory must be emphatically warned against. In every serum reaction, especially in the study of syphilis, not only is an extensive experience necessary, but what is more important, the simultaneous working with a very large number of sera is necessary. Only when a large number of strongly positive and strongly negative reacting sera are examined together, is it possible to render a definite opinion as to the weakly positive and doubtful cases, respectively. A certain centralization, therefore, appears to be absolutely necessary for the syphilis reaction. In the laboratory, the carrying out of one or the other precipitation reactions as a supplement to the Wassermann reaction is desirable. In this way, cases that react negatively to the Wassermann reaction and show a positive precipitation reaction, may possibly be followed up further after provocation, and still be recognized as syphilis. But in such cases great care must be observed. According to the author's experience, such cases are reported as doubtful.

The Swift-Ellis Treatment.—Chaille Jamison (*New Orleans Medical and Surgical Journal,* January, 1926) says that it is in the meningeal types that intraspinal therapy has its greatest value and its least in the parenchymatous. It is useless to employ it in established paresis: it may arrest tabes in its progress, but cannot cure it: vascular neurosyphilis gives rather poor results, and unless the spinal fluid shows the changes of an accompanying meningeal involvement the rationale of this particular form of therapy is not evident. Cerebrospinal syphilis, using the term in its restricted sense, usually offers a good outlook.

THERAPY

Bismuth Treatment of Acute Mercurial Poisoning.—A. Landau, I. Marjanko and M. Fergin (*Presse Médicale,* December 9, 1925), after three years' experience, have come to consider bismuth almost a specific in mercurial poisoning. It yields eighty per cent. of recoveries. One patient recovered completely in spite of anuria of seven days' standing. The treatment consists in giving by mouth cachets of bismuth subnitrate and of bismuth subcarbonate, 6.75 gram, four to six times a day. The other measures customary in such cases are also used, such as wet packs, ten per cent, glucose solution intravenously, five per cent., glucose solution by enteroclysis, and heart stimulants. Rhubarb is also given to counteract the constipating action of the bismuth. The diet is reduced to tea with sugar and orange juice, followed by a diet low in proteins. The prognosis in mercurial poisoning depends, in particular, on the rapidity of onset and duration of the anuria. The azotemia is less important, recovery having occurred in spite of an azotemia of seven per cent. A fatal influence lies in the infections that invade the extensive surfaces of ulcerated mucous membrane in the digestive tract. The obstinate vomiting, bloody diarrhea and severe pains which preclude the taking of food, dehydrating the system and weakening the heart, seem to be secondary to these infections. The benefit from bismuth seems to result from its ability to prevent the onset of these infectious complications, although it may be that there is also a specific chemical action of the bismuth on the mercury, with the formation of stable, harmless compounds.

Treatment of Rheumatoid Arthritis by Intramuscular Injection of Guaiacol, Iodine, and Camphor.—S. Watson Smith (*British Medical Journal,* October 10, 1925) obtained satisfactory results with the intramuscular injection of guaiacol, iodine, and camphor dissolved in oil in nine cases of rheumatoid arthritis and articular fibrositis, other than the postinfective, gouty and gonorrheal forms. The cases ranged between the early and the subacute and the rigid and deformed chronic case. In four cases autovaccines were of no value. All had the various other methods of treatment usually employed. One showed an eminently satisfactory result. Three other patients were definitely relieved. The result in another case was good. Four patients were benefited by a short course of injections.

The author does not suggest that the oil should displace vaccine or other treatment, but rather that it should be employed along with those other general and local means commonly used. The oil is made up in ampules, each containing ten per cent. guaiacol, ten per cent. iodine, and 5 per cent. camphor. The injections are given into the gluteus muscle, or, better still, deeply into the vastus externus about the middle of the thigh, repeated every second or third day.

In no case was there any serious general reactions or after-effect; there was some pain and stiffness in and around the affected joints twenty-four hours or so after the injection, with malaise and slight rise of temperature; one came to expect it, but it was transient, and there was no evil effect other than this. The urine should be tested and, as far as possible, disease of the kidneys excluded before commencing the treatment, and again, occasionally, during its continuance. The highest dose given at any one time was 1.0 c.c.; 0.25 c.c. was injected as an initial dose, and this was increased quickly till 1.0 c.c. was reached; this quantity was then continued with, being repeated every third day or, when thought necessary, every second day.

Toxic Effects of Lead Administered Intravenously.—No one hitherto has had an opportunity of observing the toxic effects in the human subject of measured quantities of lead administered intravenously at known intervals. The accuracy of the observations reported makes them of some importance in any consideration of lead poisoning. Some two hundred patients were given injections by W. Blair Bell, W. R. Williams, and L. Cunningham (*Lancet,* October 17, 1925) in the course of the treatment of malignant neoplasms. The actual form of the lead administered varied considerably from time to time, but the last fifty-eight cases were treated almost entirely by intravenous injections of metallic lead in colloidal form. In the early cases lead acetate, lead iodide in a partly colloidal state, and compounds of lead with thyroidin and with hemoglobin were used. During the treatment and before it was commenced complete and careful analyses (microscopical and chemical) of the blood and urine and hepatic functional tests were made at intervals. The toxic effects of lead were noted on the following systems and organs: 1, the blood and blood-forming organs; 2, the alimentary system; 3, the nervous system, including the retina; 4, the kidneys; 5, the liver. The susceptibility of the individual, the body weight, the age and sex of the patient, and the size of the malignancy were all taken into consideration, and it was found that these factors may interact so as to produce a complex arrangement that is impossible to estimate in any statistical manner, and it is this that makes treatment of malignant disease with lead extraordinarily difficult.

Small doses of lead given over a long period of time produce a dangerous cumulative effect. On the other hand a few large doses administered at long intervals, considerably exceeding in total quantity of lead the amount given in small repeated doses, may, after the initial symptoms, leave no bad effect whatever.

Blood changes.—1. Lead causes changes in the erythrocytes. There is punctate basophilia, which may appear within a few hours of the initial dose. Anemia and its accompaniments, polychromasia, anisocytosis, and poikilocytosis occur later. This anemia may be only temporary, or, if bone marrow be involved, may persist.

2. Leucocytosis has frequently been observed, especially when the blood has been examined shortly after an intravenous administration of lead. Leucopenia occurs occasionally. Neither of these phenomena appears constant.

3. A slight relative lymphocytosis may occur, but this is not generally marked.

4. There is a definite increase in the number of granular forms of leucocytes.

5. Anemia is a consequence of the long continued administration of lead, and it is accompanied by the usual symptoms of that condition—namely, headache, lassitude, and palpitation. In women there may be amenorrhea, which is not constant, and depends on many circumstances.

Alimentary system.—1. Blue line at the gum edge is rarely seen when lead is administered intravenously.

2. Nausea and vomiting appear to be dependent on the amount of lead administered, but occur after a smaller total quantity when given in massive doses, rather than after the long continued administration of small doses.

3. Intestinal colic occurs with considerable frequency after the administration of massive doses; it is not seen after the long continued administration of a smaller quantity.

4. Constipation and diarrhea have not been observed as definite phenomena supervening under the treatment adopted.

Nervous system, including the retina.—1. Psychopathies may occur after the intravenous administration of lead; they are, however, rare.

2. Neuropathies do not occur when lead is administered in the manner mentioned.

3. The retina may be affected; in these circumstances it is probable that it is a concomitant of renal involvement.

Kidney.—1. The toxic effect of lead on the kidney as the result of intravenous therapy is sufficiently frequent and of such magnitude as to require the greatest caution in the administration of this drug, especially in large doses.

2. The functional impairment caused by many small doses is smaller in degree but more permanent than that caused by occasional large doses.

3. The earliest indications of renal failure appear to be: a, diminution in the quantity of urine secreted; b, the presence of albuminuria; and c, the presence of edema.

4. A rise in blood urea does not occur, as a rule, until the damage is sufficiently great to be detected clinically. Changes sufficiently great to be of value have not been observed in the urea concentrating power of the kidney.

5. As in nephropathies due to other causes, it is difficult to correlate functional impairment with pathological change.

Liver.—Pathological changes are not so marked in the liver as in the kidney, and the main impairment of function seems to be connected with the bile producing mechanism.

In general it may be said that the administration of lead is a form of treatment, that should never be attempted by those who have not complete laboratory facilities at their disposal, and who have not studied for some time the actual treatment of patients.

A Pharmacodynamic Study of the Anthelmintic Properties of Two Oils of Chenopodium.—A. Richard Bliss, Jr., (*Journal of Laboratory and Clinical Medicine,* March, 1925) undertook this investigation because of the inadequate supply for human and animal medication of the oil of Chenopodium (American oil of wormseed), and the resulting high price of the Maryland oil of chenopodium, which is preventing the use of the drug in the treatment of domestic animals. The common ascaris of the dog was used as the test worm in determining the anthelmintic properties of the three oils tested, which were respectively oil distilled from plants from Carroll County, Maryland, from Adams Co., Illinois, and from cultivated wild wormseed plants in Adams Co., Illinois. The result of this study showed that oil of chenopodium properly distilled from plants cultivated in the middle Western States is as efficacious in dogs against ascarides as the Maryland oil of chenopodium. On the basis of these experiments Bliss feels that the findings would apply equally well to man.

Experimental and Clinical Observations on the Actions and Therapeutic Uses of Ethylisopropylbarbituric Acid.—D. E. Jackson and Louis A. Lurie (*Journal of Laboratory and Clinical Medicine,* November, 1925) report the use of the calcium salt of ethylisopropylbarbituric acid as a hypnotic. It is a white, sandlike powder which is sufficiently soluble in water to permit of its experimental use by intravenous injections in animals. Experiments on dogs are described showing its action on the respiration and circulation. In animals, the equivalent of a medicinal dose produced but little action on the circulatory system. Very large doses of the drug may be injected intravenously without causing the death of the animal, but when death does occur, it is due to central respiratory paralysis. Consequently, the treatment for poisoning with the substance should consist of respiratory stimulation or artificial respiration. The action of the drug, when given in therapeutic doses, is almost entirely on the central nervous system and especially the cerebrum. In animals, there is an overpowering desire to lie down quietly and sleep. The drug has been used in a great variety of cases clinically by many physicians, with no untoward effect on the heart, lungs, or kidneys. The outstanding feature in all cases is the ease with which a refreshing sleep is produced, without the usual feeling of lassitude and torpor the next day. This drug has proved of value in curing patients of the habit of taking hypnotics, as it not only produces sleep the night it is given, but its sedative action persists so that as a rule the patient will be able to sleep the following night without resorting to the drug.

Lipiodol in Neurosurgery.—A. S. Maclaire (*American Journal of the Medical Sciences,* December, 1925) reports a case in which the intraspinal damage was definitely increased by the use of lipiodol. This preparation, which is a fifty-four per cent. solution of metallic iodine in a vegetable oil, is almost nonabsorbable and can be said to be irritating if left within the subarachnoid space over an indefinite period of time. Hence it is advisable not to use it as a means of localization except as a last resort, and only when laminectomy is to follow in a few days. The oil should then be removed from the intradural space.

Bacterial Vaccines in Asthma.—Grafton Tyler Brown (*American Journal of the Medical Sciences,* January, 1926) contributes a valuable paper to this controversial subject. His results in one hundred and forty-four cases of asthma treated with bacterial vaccines were: Seventy-four, or fifty-one per cent., completely relieved of asthma; fifty-six, or thirty-nine per cent., improved in varying degrees, and fourteen, or ten per cent., unimproved. His method of diagnosis and treatment should be read in the original.

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Medicolegal Notes.

IDENTIFICATION OF X RAY PHOTOGRAPHS

The Illinois Appellate Court holds, Wicks v. Cuneo-Henneberry Co., 234 Ill. App. 502, that in an action for personal injuries testimony of the plaintiff's physician that he had examined plaintiff's hand and had x ray photographs taken which he produced in court, and further testimony that the photographs were true and correct presentations of plaintiff's hand at the time they were taken, was sufficient identification of the photograhps to allow their admission in evidence.

ADMISSIBILITY OF DECLARATIONS AND DESCRIPTIVE STATEMENTS OF INJURED PERSONS

The Minnesota Supreme Court holds, Lund v. Chicago, R. I. & P. Ry. Co., 204 N. W. 628, that mere descriptive statements of a sick or injured person as to the symptoms and effects of his malady are only admissible under the following circumstances: First, they must have been made to a medical attendant for the purpose of medical treatment. Second, they must relate to existing pain or other symptoms from which the patient is suffering at the time, and must not relate to past transactions or symptoms, however closely related to the present sickness. Third, such statements are only admissible when the medical attendant is called upon to give an expert opinion based in part upon them.

The declarations of a party himself, to whomsoever made, are held to be competent when they are expressive of existing pain or suffering. Such are regarded as exclamations or complaints which are the spontaneous manifestations of distress. But descriptive statements of existing pain or suffering are only admissible when made to a medical attendant for the purposes of medical treatment.

DEFENDANT'S DECLARATIONS AGAINST INTEREST IN NEGLIGENCE CASE

The Oklahoma Supreme Court holds, Bungardt v. Younger, 239 Pac. 469, that generally the skill required of surgeons in performing an operation is ordinary skill, and the care required of them in the subsequent treatment of the patient is ordinary care. In actions for negligence in cases of this character plaintiff has the burden of proving want of ordinary skill in the performance of the operation, or want of ordinary care in the subsequent treatment, and nonsuccess or unsatisfactory results of the operation will not alone establish the essential elements of legal detriment. Where, however, there is evidence of facts attending the operation or the subsequent treatment which in the ordinary affairs of life would bear a causal relation to the demonstrated result, and those facts are of such nature as to be comprehensible to laymen of ordinary intelligence, the probative value of such evidence and the causal relation of such facts to the alleged legal detriment are questions of fact for determination by the jury under proper instructions. In such a case, where expert evidence is required to make out a cause of action, and there is evidence of declarations against interest proved to have been made by the defendant, himself an expert and assuming to treat the plaintiff with ordinary care and skill, which, with all the other facts and circumstances in evidence, tends to show a want of ordinary care and skill in such treatment and to show a causal relation of such want of care and skill with the resultant detriment complained of, it is held that such evidence is sufficient to entitle the plaintiff to go to the jury.

INFERENCE CANNOT BE BUILT UPON INFERENCE IN MALPRACTICE CASE

The Missouri Supreme Court holds, Cardinale v. Kemp, 274 S. W. 437, that all expert testimony must be predicated upon facts or conditions conceded to be true or existing or assumed to be established by other testimony, and that necessity excludes the possibility of basing one opinion upon another opinion. Therefore, in an action for malpractice, the negligent act alleged being the cutting plaintiff's eyeball with a sharp instrument while removing a cyst from his left eye, causing the eyeball to shrink and destroy the sight thereof, it is held that, there being no proof that there was a cut of the plaintiff's eyeball by the defendants, that fact could not properly be proved by an opinion. To assume it without any proof as the producing cause of the condition found would be, it is held, to have the experts find the facts and decide the case on guess work.

The plaintiff, it is held, could not make out his case by building one inference upon another. It could not be inferred that the scar found upon the eyeball was caused by a cut, and further that the defendants caused the cut, and still further that the cut caused the loss of the eye.

RIGHT TO RECIPROCITY LICENSE

A physician was permitted to take his examinations before the board of medical examiners of the state of Michigan upon a certificate from a college of medicine which was a member of the Associtaion of American Medical Colleges that he had passed his final examinations by the faculty and would be recommended to the board of trustees for graduation. In mandamus proceedings to compel the board of medical examiners in California to issue the physician a license to practice in California the sole question was whether or not in legal contemplation he was possessed of a diploma from the Michigan medical college at the time he was permitted to take his examination before the board of medical examiners of Michigan. It appeared that although the college diplomas were not issued to the graduates when petitioner took his examination before the state board, they were issued several days after, and before he was given his certificate to practice in Michigan. The California District Court of Appeal, First District, held, Levin v. Board of Medical Examiners, 239 Pac. 410, that the physician was entitled to a reciprocity license to practice in California provided all other requirements were satisfied, on application under section thirteen of the California Medical Practice Act. The court said: "The certificate was to all intents and purposes the equivalent of a diploma. It certified that petitioner had passed his final examinations, and he was therefore entitled as a matter of right to a diploma. Moreover, the diploma was in fact issued to him before he was granted his license. To say that under such circumstances he was not possessed of a diploma entitling him to take his examinations would be to put a narrow construction upon our statute, which requires the filing of a diploma prior to the taking of examinations. The statute should receive a reasonable construction, and the spirit and reason should prevail over the letter." Mandamus was therefore granted.

EVIDENCE OF SUBSEQUENT X RAY BURN NOT ADMISSIBLE

Where a defendant was charged with negligently using an x ray machine on plaintiff, so that the latter was badly burned, the Mississippi Supreme Court holds, Unger v. Grimsley, 103 So. 341, that evidence that two years after the injury complained of the defendant burned another person while using a different x ray machine and under entirely different circumstances, was inadmissible and highly prejudicial.

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Some Notes on Cancer*

V.—On Metastases and Other Distance Effects in Cancer

WILLY MEYER, M.D.
New York

Whenever surgeons have felt the urge of making the attempt to fathom the problem of cancer, they have usually approached the subject not from the more detached viewpoint of the pathologist and the laboratory student whose original work principally purposes the advancement of science, but from the clinical point of view of sympathetic commiseration of the unbearable suffering with which they found themselves continually confronted; and how frequently with no satisfactory means at hand for its alleviation!

I am following where others have led. My inquiry is directed at the whole range of cancer questions and allied ramifications, at the entity "cancer problem" in its entirety, at details only as far as unavoidable in the broader endeavor.

The place to test conceptions is the clinic. It was this reflection that became the guiding thought in the shaping of the present series of articles. A number of papers of general review and on the theoretical questions involved will be followed by a paper on practical questions. In the former the foundation is being laid for the latter, in which the conceptions developed in the preceding papers are tested on personal clinical experiences and on the clinical experience of others taken from the literature, this inexhaustible treasure trove of the best thought and experience of the world.

The support from the literature thus far advanced for our contentions has been principally of a general character. It now becomes necessary to go into the detail of these matters.

Regarding the question of growth in cancer[1] the theses have been advanced in previous communications[2], that there seems to be good reason for believing "new growth" a passive phenomenon due to enforced cell division, such enforcement presumably resulting from the presence in a group or groups of cells of a chemically changed focus (or foci); and further good reason for believing the various types of new growth, from hyperplasia through all the intermediate benign stages up to and including malignancy, to be reactions to and symptomatic of merely quantitative differences in the degree of concentration in the focus of the chemical substance which enforces the cell division.

By means of numerous quotations from the literature we tried to establish in the third communication of this series the point that throughout this entire proliferative territory from hyperplasia to including malignancy there have been found no morphologically discernible lines of demarcation anywhere, but that from end to end all the clinically distinguished types of proliferative growth flow into one another by imperceptible gradations. The inference therefrom would appear unavoidable that the degree of concentration of the chemical substance in the focus must also vary by imperceptible gradations, if this substance is to be capable of enforcing a reaction of similar gradations in the tissue.

Thus, by seeming to turn in a circle, we arrive at the conclusion that from the moment the degree of concentration of the division enforcing substance in the focus exceeds the limit of physiological tolerance of the normal cells, we would seem to witness the onset of proliferation of the affected cells, with simple hyperplasia as the threshold proliferation.

At this point the demand for space of the younger generations of new cells is believed to be still easily satisfied. Hence there is probably little crowding of the new cells at the focus and consequently their passive outbound movement would be comparatively slow. At the rate at which the concentration of the division enforcing substance in the focus increases—why it should do this will be discussed later—so would, according to our contention, also increase the rapidity of cell multiplication, in other words, so would increase the crowding of new cells at the focus, and therewith the energy behind the passive outward bound movement of these cells, the "cell *vis-a-tergo*" (v. Bardeleben (1) p. 500). This process, increasing by imperceptible gradations, becomes clinically discernible at intervals and is described successively by the clinical terms of hyperplasia, inflammatory new growth, benign tumor growth, carcinoma, carcinosarcoma, sarcoma, the differences from our point of view consisting largely in the phy-

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[1]The term "cancer" will, as before, so also here be employed to encompass not only every growth of malignant character, but also the whole process leading up to it.

[2]I. *Jour. Cancer Research*, 1924. 8. 45.—II. *Am. Jour. Med. Sc.*, 1925. 170. 481.—III. *ibid.*, 535, 1926. 171.—IV. *ibid.*, 543, 1926.

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sical factor of more or less urgent cell crowding[3] Biologically considered, there seems to exist no actual difference between sarcoma and carcinoma, or for that matter between an adenocarcinoma and a squamous cell carcinoma, and according to numerous previously quoted authors no difference in principle between malignant and benign growth. "Clinical distinctions of this character," according to Watermann (2) (p. 380) "are meaningless for the biological problem."

Let us now assume again the primary presence of the focus. One might call the focus, as Legrand (3) (p. 109) did in another connection, "a medium in the medium." Why and how it presumably originates and what it probably contains to produce the effects discussed in the present article, are questions that will be taken up in later chapters. Here our first concern is to make the existence of the focus look probable. For that purpose we shall analyze its effects. These effects appear first as influences exerted upon its immediate surroundings, the tissue enclosing the microscopic focus; and, second, as distance effects: effects in the near distance and effects in the far distance, the latter the socalled metastases. After the effects have been discussed in detail, we shall then argue back from the effects to the focus.

We said, let us assume again the primary presence of the focus. Let us further assume the division enforcing substance in the focus to have gradually reached a concentration capable of producing the degree of cell multiplication, the degree of cell crowding, the degree of passive movement of the cells away from the focus and the degree of their passive accumulation commonly described by the hazy term of malignancy.

If we now examine the developments that have taken place, we perceive in the tissue a focus of microscopic size and radiating therefrom—filling up the fissures of the tissue and lying loosely in its interspaces, later also in the preformed lymph channels, (Fuss 4)—irregular strings and variously shaped bodies of passively accumulated cancer cells. Ribbert (5) (p. 330): "Cancer cells are lying loosely in the alveoli and in no connection whatever with the walls of the same."—Geipel (6): "From a carcinoma of the stomach the lymphatics of the skin were completely filled up with cancer cells, but their walls were in no way changed."—M. B. Schmidt (7) (p. 38): "In my specimens . . . when emboli of cancer cells completely filled the lumina of lung arteries of smaller caliber, the endothelium of the latter could in many instances be demonstrated to be intact."—All these loose cells are presumed to be in passive motion away from the focus, supposedly pushed outward from behind by the demand for space of the latest generations of new cells. v. Hansemann (8) (p. 192): "Cancer cells exhibit lazy ameboid movements; they throw out plump pseudopods and change their shape . . . Their motility does not equal the motility of leucocytes."

It stands to reason that on being forced past fixed tissue cells, fibres and other tissue elements, the moving loose cells will have to overcome more or less resistance. Eventually, therefore, it would seem that the back pressure from the body of displaced moving cells upon the newly formed cells at the focus would have to become unavoidably equal to, if not greater than, the outward pressure of the newly formed cells in their demand for space. This, of course, is mere speculation. If, for the sake of the argument, we assume it to be correct, then the movement of the cells at the centre would correspondingly slow up; the cells there would remain exposed longer to the influence of the focus and there would seemingly be for the internal condition of these cells a chance of coming to equilibrium with the condition of the focal medium. Greischer (9) injecting experimentally fatty solutions of azo colors, of indol, of skatol, and other substances found the character of the induced proliferation as to massiveness, intensity and extent, to depend on the longer or shorter time of exposure of the epithelium to the injected substances. . . . The focal medium would then cease to be a stimulus of division for this group of cells, and there being no further young cells demanding space, the group would come temporarily to rest. This result of our assumption squares with the observation of Virchow (10) (p. 50) that "the first existing mother nodule grows to a certain size and then stops growing."

The focus would now have grown in size. It would consist of the original focus plus the fringe of loose, but now resting cells which are supposed to have acquired by inward and outward diffusion the same degree of chemical change that characterized the original focus. But between the limits of this enlarged resting centre and the margin of the new growth the multiplication of cells would necessarily continue, because of the disharmony in all likelihood existing between the condition of the cells arrived more or less changed from the centre and the local medium into which they were being pushed out. This disharmony would obviously be greatest at the margin, where the changed moving cells come in contact with the more or less normal general medium.

Here, at the margin of the new growth, quite a variety of variously conditioned tissue cells would seem to be present: 1, loose, changed cells, newly arrived from the centre, which might be of epithelial or of connective-tissue origin; v. Hansemann (11) (p. 36): "The law is of general application that proliferative stimuli never confine their effect to a definite tissue, but cover a certain space and affect all the tissue therein contained irrespective of type."—Opitz (12): "I have yet to see the carcinoma in which epithelial proliferation had not been associated with connective tissue proliferation"; 2, the fixed cells of the marginal tissue; 3, loose, changed cells in mitosis, the division being enforced by their differing in condition from the condition of the marginal medium. This medium being, according to our argument, nearer to normality than the cells, the arriving loose cells would evidently here at the margin undergo a change in the direction of normality, and in the course of the change would give off to the medium the chemical substance impressed upon them at the centre. These loose cells, after having originally been dedifferentiated at the centre when as normal cells they first came under the influence of the focus, would now seem to be redifferentiated at the margin on coming under the influence of a near-normal medium, they changing back to as near an

[3]The chemical questions involved will be fully discussed in the next paper.

approach to their previously normal state as their injured condition and the condition of the medium will permit;—Böhm (13) (p. 203): " . . . intoxication and detoxication may occur after the analogy of a reversible reaction in the physicochemical sense, the toxic substance absorbed by the protoplasm being returned to the medium at the rate at which the concentration of the toxin decreases in the medium"; 4, fixed marginal tissue cells undergoing mitosis on becoming exposed to the unaccustomed substance in their medium which is given off by the newly arrived loose cells in the process of their redifferentiation. These dividing fixed marginal cells are consequently being dedifferentiated in the direction toward malignancy. Loeb (14) (p. 796): "Through the action, especially of chemical growth stimuli, normal tissues can be transformed into cancerous tissue without the intervention of ulceration."

The marginal cell divisions as previously stated have usually been regarded as the manifestation of their alleged newly acquired powers, or newly awakened latent powers of incessant lawless multiplication; while their advancing into the adjacent tissue has been looked upon as the manifestation of their power of irresistible active invasion. The margin of a malignant tumor was ordinarily considered its growing edge, its living malignancy when the malignant centre had already died. v. Hansemann (8) (p. 103): "In malignant tumors mitoses are generally found in groups, suggesting focal stimuli of proliferation, the groups occurring principally at the margin of the tumor, indicating this part of it as the point of greatest growth."—Ménétrier (15) (p. 181): "It is at the margin of the cancer that we can study what took place at the original lesion."—Stern (16) (p. 230): "The central . . . part of a cancer becomes necrotic, the marginal portion continues to grow."

On the other hand there are authors whose observations have been such as to induce them to form a contrary opinion, namely that cancer cells lose their socalled malignant powers at the margin of the new growth. Gaylord and Clowes (17) (p. 651) quote Petersen as bringing evidence that at the margin the tumor cells "were being deprived of their vitality by some obscure process;" and they themselves observe (p. 658) (17): "Epithelial cells at the margin of the tumor are in some way robbed of their power of destructive proliferation, after which they undergo simple atrophy and gradual absorption by the surrounding connective tissue."

We might note here that our argument is in a way in line with both classes of observations, we having found at the margin cells in process of dedifferentiation, and other cells in process of redifferentiation. Petersen's "obscure process," according to our contention, would seem to be the disharmony existing at the margin between the condition of the cell and the condition of the medium which surrounds it, the disharmony enforcing the adaptation of the cell to the condition of the medium by means of cell division. Legrand (18) (p. 28 ff.): "Protozoa placed in an artificial medium which slightly differs in chemical composition or in temperature, or in other physical properties from the one to which they have been accustomed, multiply and continue to multiply until they have changed the medium and the medium has changed them into mutual harmony. The cells of metazoa [of man for instance (The writer).] act the same way . . ."

As a matter of fact, therefore, the margin of a malignant tumor would seem to be not its socalled growing edge, if that term were used to denote progressive malignant intoxication of the cells. The loose, changed cells arriving at the margin from the focus would seem to keep on dividing "until the medium had changed them and they had changed the medium into mutual harmony," i.e., until on some average level less concentrated or, in other words, less malignant than the focus, equilibrium had been attained between cell and marginal medium. In that event it would be only to about this probably nonmalignant average level that those fixed marginal cells would be changed which happened to come under the influence of the changed marginal medium.

Our deduction that a malignant tumor is likely to be nonmalignant or less malignant at its margin than at its center, and that it may influence the surrounding tissue, would seem to be supported by observed near distance effects of malignant tumors. v. Hansemann (19) (p. 188) found hyperplastic growth of benign character at the margin of, and in continuity with malignant growth. Petersen (20) (p. 604) says: "We certainly cannot avoid assuming that from a carcinoma emanate influences affecting the near-distance."—*idem* (20) (p. 602): "Once a carcinoma has been established, an irritation seems to emanate from it which favors the establishment of new foci . . . In almost any carcinoma we have observed in its vicinity a hyperplasia of that tissue in which the cancer arose."—Orth (21) (p. 50): "Adjacent to genuine tumor formation is found hypertrophic proliferation of epithelial tissue."—Stahr (22) (p. 238): "Collateral hypertrophy can be demonstrated in all sorts of tissues when they adjoin cancerous tissue. Osteoplastic carcinosis is also a near distance effect of the carcinoma."—Watermann (2) (p. 380): " . . . everywhere around an incipient cancer of the integumentum parts of the tissue are frequently found in a state of hypertrophy which may be considered either precancerous, or, with equal justification, not seldom as induced by the growing cancer; for there is no doubting the fact that the incipient cancer exerts an influence upon the tissue surrounding it."—Writing on polarization, Waterman (23) (p. 580) says: "In the process of malignant tumor formation, even before anything like a tumor is discernible, there are already changes demonstrable on the border surfaces (of the cells) . . ." Still more significant regarding near-distance effects are observations made by Goldmann (24) (p. 61), who writes: "Every tumor . . . produces a circulatory apparatus of its own after the preformed vessels have been either inactivated or destroyed. Beyond a doubt, the newly formed vessels are caused by angioplastic stimuli which emanate from the tumor cells themselves. To them we must quite likely also ascribe the distance effect demonstrable on vessels of the tissue adjacent to the tumor. This (near) distance effect is the common property of all types of tumors, of carcinoma as well as of sarcoma and of chondroma. There are enormous corrugated convolutions of young vessels, also long-stretched, pedunculated, tasselshaped vascular pro-

liferations which grow out from afar in the direction toward the tumor. Thiersch has described these phenomena for skin cancers. Again we observe the most extraordinarily phantastic changes in the shape and the lumina of such vessels; one might call them the furthest outposts of the healthy tissue where it faces the advancing new growth. The matter is the more remarkable as not infrequently there is a broad zone of entirely unaffected connective tissue interposed between these phenomena and the margin of the new growth. Circulatory disturbance cannot be the cause of these vascular changes, because the changes are found only on that front of the tissue in question which faces the tumor."

From the point of view of the diminished malignancy or probable nonmalignancy of the margin of a cancer would seem to become understandable also the observation of Palugyay (25) (p. 257) that "the greater the malignancy, the more cells enter into the prophase of mitosis, but the smaller is the number of actually completed divisions." In vitro "it takes a cell thirty-six minutes to perform the mitotic fissure of the nucleus into two daughter nuclei, and additional ninety-nine minutes to finish the separation of the cell plasma," Erdmann (26) (p. 51), that is upward of two hours for the complete cell division. Now according to our contention "great malignancy" means high intensity of the effect of the focus, in other words, hasty cell multiplication, great cell crowding, strong *vis-a-tergo,* rapid passive cell movement, correspondingly quick transportation of the cells, their short exposure to the influence of the focus and their rapid removal from the focal area of high chemical intensity to a less intensely effective part of the medium. If the exposure of the cell to the focus before it is being crowded off should have lasted less than two hours, it would appear not unreasonable to assume that the cell had undergone only that much of a change as to be in harmony with the less concentrated medium into which it was being pushed out, that the latter therefore can not enforce the continuance of the mitosis, started at the focus, in the direction toward malignancy. But if this same cell in its half divided state should later reach the extreme margin, there might then be here again sufficient disharmony between the partial malignant intoxication of the cell and the more or less normal marginal condition as to enforce the continuance of the interrupted mitosis; this time, however, in the direction of the detoxication of the cell toward normality. (See Böhm [13], quoted above.)

The same reasoning would perhaps also appear applicable to the observation of McConnell (27), also of Woglom (28) (p. 392), and "of most other pathologists" (Woglom), namely that "the most slowly proliferating tumors may contain a large number of cell division figures."—According to our contention, what looks like the growing edge of progressing malignancy might in reality be the receding edge of the tumor, in other words, the place where malignant cells, by undergoing mitosis, are being partially or totally deprived of their malignant properties, as Petersen and also Gaylord and Clowes observed, and where at the same time the medium thereby acquires a partially malignant intoxication which forces the fixed tissue cells there present also into mitosis, so that in summa a margin would have the appearance of a very busy progressive growth, when in reality a considerable part of it would be recession. This point of view seems to find further support in the observation of Woglom (28) (l.c.) that "a rapidly disappearing tumor may actually have more mitoses than a vigorously growing one," and in the observation of Erdmann (29) (p. 341) regarding in vitro conditions, that "a tumor cell remains a tumor cell only while it is being propagated in tumor plasma, otherwise it becomes a cell which shows by its behavior in subsequent reïmplantation that it approaches the state of a normal metazoic cell." Sokoloff (30) (p. 465): "Where cancer cells growing *in vitro* are studied . . . after the second or third transplantation . . . they lose their high activity and return to their ordinary relatively inactive condition. The reaction is the reverse of the original one which altered their nature. An alteration in external conditions . . . leads the growing cells to return gradually to their normal condition." Applied to our case the last two references would seem to say: A malignant cell transferred from the focus to the margin of the growth becomes at the margin changed back into a near normal cell.

On the basis of the foregoing discussion the statement would seem to appear not unjustified, that there is in the literature evidence which supports our theses of enforced cell division and passive growth, the latter being the sequel of the former.

Having considered the local effects and the near-distance effects of the (still assumed) focus, we can now proceed to the consideration of its far distance effects. As a preliminary thereto we have to examine first into the question of the dissemination of cancer cells.

The channels of cancer cell dissemination are the lymph vessels and the bloodvessels. At the outset we are therefore met with the question: if, as we claim, the cancer cells are moving passively in the tissue and are in fact possessed only of borrowed, imparted energy, whence then comes to them the energy that enables them to pass from outward to inward through the solid walls of the circulatory channels and to gain access to the inside of lymph vessels and bloodvessels? But, are these walls really solid? We shall note here some anatomical facts observed by means of vascular injection by Goldmann (24) (p. 3 ff.). Goldmann states: 1, that there are no lymph vessels in the walls of bloodvessels; 2, that the walls of lymph vessels and of arteries have vasa nutritia only in the superficial coat of the adventitia; 3, that in the walls of veins the vasa vasorum penetrate in treelike formation to the intima.—This anatomical condition would seem to make apparent why cancer cells gain access more readily to veins, than to arteries. Probably they are pushed forward along the outside of the small nutrient arteries in the venous wall, until they reach the intima. Here they would then be held up until they had set up an inflammatory process in the intima which would weaken the latter and make it give way before the *vis-a-tergo* behind the cancer cells, similar to the way Goldmann (l.c.) describes their gaining access to arteries, as follows: In the perivascular tissue of arteries and lymph vessels the cancer cells may be tightly jammed and nevertheless leave these vessels intact; only when influences, probably eman-

ating from these accumulated cancer cells themselves, have set up in the walls of the arteries and lymph vessels inflammatory processes, or when such processes arise from the thickening of the intima of the vessels, or from other disturbances of the structure of the wall, and when the capillary proliferation induced by these pathological conditions has weakened the texture of the closely knit walls, only then do the latter give way before the pressure of the perivascularly accumulated cancer cells. These then seem to find their way into the vessels along the outside of the newly formed capillaries in the walls of the vessels. In the bones the bloodvessels of the bone marrow are the gate of entrance for the cancer cells, according to Goldmann (24) (p. 15), and he lets bone metastases begin in the spongiosa, respectively in the marrow and appear only secondarily on the surface of the bones. Hence here, too, the *vis-a-tergo* behind the cancer cells would appear to be a sufficient explanation for what takes place.

From these directions, therefore, our argument would probably have to fear no objections and we would seem to be on passably firm ground when we assume that cancer cells are able to gain access to circulatory channels and bones on being merely passively propelled.

For the dissemination of cancer cells would seem to be of importance only their entrance into lymph vessels and veins, by both of which they are being carried to the right heart and the lungs. Cancer cells have been observed by M. B. Schmidt (7) to pass directly from the arterial to the venous capillaries of the pulmonary circulation. Once there, the entire systemic circulation is open to them. Schiedat (50) (p. 24): "The fact is definitely and firmly established that cancer cells can pass through the lungs into the systemic circulation."

(To be concluded)

The Causation of Malignant Neoplasms

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Many centuries have come and gone since the causation of cancer first engaged the attention of the medical profession. At the present time because of the alarming degree to which the ravages of this dread disease have increased and for the reason that it is likely that prevention and cure can be accomplished only through the discovery of the cause, the demand is importunate that we exert all our energies to disentangle the skein of uncertainties which obscure and confuse this problem.

Countless explanations and theories have been advanced from time to time. What we now require are unquestionable facts which will establish the truth.

Two main schools of thought continue to exist, viz., 1, that which adopts the cellular theory and says that all neoplasms are autogenous in origin and consist solely of an abnormal overgrowth of the cells of the person or animal concerned, and 2, that which holds that the proliferation of neoplastic cells is due to the presence of intracellular microorganisms.

A long paper might be written on the arguments advanced by each of these schools, but in this communication we shall confine our remarks to a brief description of the observations and researches of Glover (1), Scott (2), and ourselves (3).

These investigations have been made with the object of throwing light on the causation of cancer regardless of what the explanation might be, but they have ultimately led us to the conclusion that the cause lies in the action of an extrinsic living agent rather than in an alteration in the physiological laws of growth.

MORPHOLOGY OF THE CANCER MICROORGANISM

Following the method of Glover, strictly avoiding the employment of all cancerous tissue showing any evidence of necrosis or ulceration, and using rigid aseptic precautions and proper controls throughout the work, we have been able to isolate a morphologically similar microorganism from every type of malignant growth with which we worked, including human carcinoma, mouse carcinoma (63), rat carcinoma, human sarcoma, rat sarcoma (Jensen) and Rous chicken sarcoma No. 1. It has been possible to cultivate this same microorganism from the blood of the hosts of these malignant growths.

The life cycle of this organism is decidedly peculiar and consists of three separate and distinct microscopically visible stages, viz., 1, bacillus; 2, spore or coccus, and 3, spore sac, in addition to which there is what we have previously described as the filtrable or ultramicroscopic phase. Each of these microscopically visible individual stages can be grown in pure culture, but alterations in the composition or in the reaction of the culture medium or in its environment will cause one stage to pass into another in the above order or the reverse.

In addition to the metamorphosis from stage to stage, variations or lesser degree occur in each individual stage. For example, spore sacs exhibit variations in size and shape, and may or may not be associated with hyphæ. Cocci are spherical and comparatively small when passing to and from the spore sacs, but are ovoid and larger (the socalled spores) when giving rise to bacilli. Bacilli are small and thin when young, but become longer and thicker when older and containing spores.

The organism, in fresh cultures, is gram positive; it takes most of the ordinary stains but the bacillus and the coccus stages take the stains more readily than does the spore sac stage.

A striking feature of the life cycle of this micro-

organism is that it is filtrable in at least one of its phases. This is shown in either of the following tests:

1. A fluid culture of the actively growing microorganisms in either the bacillus or the coccus stage is first passed through a Buchner filter, in which pressed pulp one half inch in thickness and sand have been placed, to rid it of all the larger solid particles. The Buchner filtrate is then passed under pressure through a Berkefeld filter which before and after the experiment was found to hold back the Bacillus prodigiosus. A portion of the second filtrate is then taken up by means of a pipette and placed in the medium and incubated at 37° C. Within seventy-two hours pure cultures of bacilli or cocci, which show all the characteristics of the microorganism of the original fluid culture, are found to be present. Controls are invariably negative.

2. Pieces of fresh human carcinomatous, mouse carcinomatous, rat carcinomatous, human sarcomatous, rat sarcomatous and Rous chicken No. 1 sarcomatous tissues are taken and each tissue divided into two parts. One part of each of these tissues is placed separately in the medium and incubated at 37° C. The other part of each tissue is minced separately with sharp scissors and thoroughly ground with sand in a porcelain mortar in order to break up the cells; Ringer's solution is then added until the mass is well diluted and it is then thoroughly mixed. The suspension from each is next filtered and allowed to gravitate through layers of pressed pulp and sand to remove the sand and crushed tumor cells. The filtrate from each is then passed under pressure through Berkefeld filters which before and after the experiment were found to hold back the bacillus prodigiosus. The second filtrate from each cancerous tissue is then taken up by means of a pipette and placed separately in the medium and incubated at 37° C. After one to three days a pure culture is obtained from each of the various filtrates which is identical with that cultivated directly from the corresponding part of the same cancerous tissue; and in every instance the organism of each of these pure cultures shows the characteristics of the cancer microorganism described herein.

When each of the Berkefeld filtrates described in the foregoing experiment is centrifuged for one hour at 2,800 revolutions a minute and fresh and stained preparations made therefrom no organism can be observed under the ordinary microscope; but when these same filtrates are placed separately in the culture medium and incubated at 37° C. a pure culture is obtained from each of the various filtrates in from twenty-four to seventy-two hours which shows all the characteristics of the microorganism cultivated directly from the other portion of the fresh cancerous tissue. Controls are invariably negative.

BIOCHEMICAL REACTIONS OF THE HUMAN CARCINOMA MICROORGANISM

Gelatin, after being inoculated with stab cultures of the microorganism, is completely liquefied in from three to five days at room temperature. All sugars of a series with which we worked, excepting granatose, are fermented within two days at 37° C. The amount of fermentation and the increase in acidity of the sugar broth, and the degree of liquefaction of gelatin depend, however, upon the virulence of the culture; where the organism is attenuated by keeping it for some time under conditions unfavorable to its growth, or by subculturing it on media other than Glover's, it loses more or less of these specific properties varying directly with the degree of attenuation.

When the organism is grown in the fluid medium the acidity of the medium is at first increased due to the splitting of the sugar present in the medium; but after all the sugar has been used and as the production of the toxin reaches its maximum the reaction of the medium becomes alkaline. We believe that the action of the organism on the sugar in the fluid medium is similar to that which occurs in the living tissues when the organism invades a cell, i. e., it acts on the cell sugars, splitting them and causing an excess of acid at the same time liberating weak toxins. It is to these complex chemical substances or toxins that we must attribute the abnormal cell proliferation in carcinoma and in sarcoma.

PLEOMORPHISM OF THE CANCER MICROORGANISM

For the benefit of those who deny the possibility of such a complex life cycle as the one we have described in the cancer microorganism we suggest the perusal of the monumental work of F. Löhnis (4). In this work a changing of the morphology of microorganisms is shown to be a common occurrence, and variations in form analogous to those described by us will be seen to be present in the life cycle of several varieties of microorganisms. The pleomorphism of other microorganisms is brought out in the works of Francis (5), Tunnicliff (6), Parker (7), Räth (8), and Tunnicliff and Jackson (9).

Whether symbiosis accounts for such unlike types of the microorganism we describe has been carefully considered, but the fact that each type may be grown in pure culture and passed at will into pure cultures of the other types effectually disposes of any such theory.

Again the possibility of contamination by extraneous microorganisms can be dismissed when one considers the countless numbers of cultures and subcultures that have been made with the same result; and the experimental production of malignant growths with injections of this pleomorphic organism and the failure to produce malignant growths where experimentally contaminated cultures of the microorganism were employed.

Confirmation, in a greater or lesser degree, of the work herein described may be obtained in the papers of Young of Edinburgh (10), and of Stearn, Sturdivant and Stearn of Pasadena (11), each of which describes a pleomorphic microorganism isolated from carcinomatous tissues and having salient features in common with the cancer microorganism herein described. The micrococcus isolated from carcinomatous tissues by Nuzum of Chicago (12), and the ultramicroscopic organism isolated from sarcomatous tissues by Gye (13) and Barnard (14) represent, in all probability, individual stages or phases in the life cycle of the cancer microorganism herein described.

EXPERIMENTAL PRODUCTION OF CANCER IN ANIMALS

Glover demonstrated malignant metastasizing animal lesions, both in the gross specimens in living and in dead animals and the microscopic sections of same, at St. Michael's Hospital, Toronto, in June, 1920;

he demonstrated others at St. James Hospital, Butte, Montana, in June, 1924, all of which he had produced by repeated injections of pure subcultures of the cancer microorganism herein described. In an article in *Northwest Medicine* for April, 1925, Scott reproduces photographs and microphotographs of primary and secondary carcinomatous lesions produced by him in monkeys by means of repeated injections of pure subcultures of the carcinoma microorganism. From these lesions, both primary and secondary, the organism was again isolated and grown in pure culture.

IMMUNITY AND TREATMENT

The establishment of an immunity to cancer in animals is described by Scott in an article published in *Northwest Medicine* for April, 1925. In the October issue of the same journal Scott reports on results he has obtained in the use of an antitoxin, obtained through the horse, in the treatment of cancerous patients and refers again to the immunity now being produced in animals and in humans.

GYE'S SPECIFIC FACTOR

We produced Gye's "specific factor" in the manner detailed by him only substituted one half cubic centimetre of chloroform and treatment for a total of three and one half hours at 40° C., in lieu of the few drops of chloroform and treatment for a total of three hours at 37° C. specified by Gye (13). From this "accessory chemical factor" or "adjuvant" which Gye terms the "specific factor" in cancer we cultivated the cancer microorganism herein described in pure culture but in an attenuated form; when this microorganism cultivated from Gye's specific factor is injected with a trace of infusorial earth into the breast muscle of a chicken a true spindle celled sarcoma develops at the point of inoculation.

CONCLUSIONS

1. We have isolated a similar pleomorphic microorganism from every type of malignant growth with which we worked including human carcinoma, mouse carcinoma (63), rat carcinoma, human sarcoma, rat sarcoma (Jensen), and Rous chicken sarcoma No. 1.

2. The life cycle of this pleomorphic microorganism consists of three microscopically visible stages and of an ultramicroscopic or filtrable phase. Each of these microscopically visible stages can be grown in pure cultures and subcultures and at will changed into pure cultures of another stage in its life cycle.

3. Injections of this microorganism into animals, with a trace of infusorial earth, produces malignant metastasizing growths.

4. The microorganism can again be recovered in pure culture from these primary and secondary animal growths.

5. The pleomorphic organism described by Young and by Stearn, Sturdivant and Stearn appears to be similar to the microorganism herein described. The micrococcus isolated by Nuzum of Chicago from carcinomatous tissues and the ultramicroscopic organism described by Gye and Barnard appear to be individual stages in the life cycle of this microorganism.

6. The specific factor of Gye contains the living specific microorganism described herein, though the organism has been attenuated by the chloroform treatment.

7. Human carcinoma has been effectively treated by a serum antitoxin.

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Gastric Ulcer and the Atomic Theory of Disease

With Observations on Diagnosis and Treatment

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The surgical treatment of gastric and duodenal ulcer is reasonably successful at the expense of a major surgical operation, but there remains a certain percentage of these cases in which the operation does not complete the cure, and a certain percentage of recurrence of the disease after the operation. This recurrence is variously estimated at from five to twenty per cent. When, in addition, it is considered that laparotomy for gastric ulcer has a definite mortality, it is realized that operations of the type of gastroenterostomy (which do not directly treat the ulcer, but produce bodily conditions for its cure) do not offer complete satisfaction and are unintelligent measures at least as the mechanism of cure is imperfectly understood.

Smithies (1) has analyzed 566 cases of gastric cancer and believes that 77.5 per cent. had a history of gastric ulcer. This is suggestive that the treatment of gastric ulcer requires more careful consideration. This tendency to cancerous involvement seems to be limited to the prepyloric, as Orator (2) found malignancy in two per cent. of the ulcers of the middle portion, in thirty per cent. of the prepyloric region, but never in a duodenal ulcer in seven hundred ulcer and one hundred and fifty gastric cancer cases.

Cause	*Mechanism*	*Expression*
Energy from orientation and configuration of electrons in atoms and molecules.	Coalescence of colloid Bivalent and trivalent cations and anions produce vagus effects.	
Inorganic salts.	Less cell conductivity. Less potential difference. Anodal. Negative. Increased smooth muscle reaction. Lower pH (higher H-ion concentration in blood). Less permeable cell membrane. Vagus. Plasma less alkaline. Oxidation.	Most infections. Colitis. Typhoid. Diabetes. Neurasthenia.
Lipoid solvents.		HEALTH
Hydrogen ion concentration.	Reduction. Plasma more alkaline. Sympathetic. More permeable cell membrane. Higher pH (lower H ion concentration in blood). Decreased smooth muscle reaction. Positive. Cathodal. Greater potential difference. Greater cell conductivity. Univalent cations produce sympathetic effect. Dispersion of colloid.	Psychasthenia. Deficiency disorders. Tetany. Rickets. Syphilis. Eclampsia. Respiratory infections (tuberculosis) (pneumonia) Gastric ulcer Essential hypertension. Edema.
Oxidation reduction poise.		

METABOLISM

In a study of gastric ulcer cases by means of the fluoroscope, x ray pictures and estimation of acid base conditions (particularly in regard to the p.H. of the blood plasma) according to the method described by Ludlum and McDonald (3), it was found that the gastric ulcer cases were usually upon the alkaline, sympathetic side of the balance as shown in the accompanying diagram.

The method of study was by means of the ordinary clinical investigation of gastric ulcer, but in addition, the determination of the acid base balance (particularly blood plasma p.H.) and by complete x ray study, not only of the stomach, but of the large intestine. This resulted in the appreciation that gastric and duodenal ulcer is not a disease of acidosis, but usually a disease of alkalosis, with an alkaline p.H. in the blood plasma and that the stomach and large intestine showed evidences of sympathetic innervation as described by Ludlum and McDonald (3).

FIG. 1.—Normal colon, postural tone and haustral arrangement. These illustrations are made from thin paper tracings of the x ray films on the viewing box, so are correct as to scale and outline. The postural arrangement is dependent upon the vagus and sympathetic balance of the vegetative nervous system as is shown by our experiments with the injection of atropine (a sympathetic stimulant) and eserine (a vagus stimulant) with corresponding alteration in the colon and stomach picture (Ludlum and McDonald, "The Large Intestine and the Effects of Atropin and Eserine"—MEDICAL JOURNAL AND RECORD, 1926, Jan.). The postural tone and haustral arrangement are not, therefore, the result of socalled filling effects.

In the x ray study of gastric ulcer much attention has been given toward the questions of anatomical distortion, the degree of motility and retention of the barium meal, but little consideration has been given to the postural tone of the smooth muscle of the stomach and intestines and the reasons for these organs assuming the shapes they do. Essentially, motility of the stomach and intestines depends upon the balance of action of the vegetative nervous system. The vagus part causes contraction of the lower two thirds of the stomach and the intestines and the sympathetic portion causes dilatation. The upper or cardiac third of the stomach is in some dispute as to its innervation and, in our opinion, this possibly has three innervations, being both stimulated and inhibited by the vagus and inhibited by the sympathetic branches of the vegetative nervous system.

The character of the postural tone (haustral arrangement) of the gastric ulcer cases, was consistently uniform when x rayed under the condition of the test (twenty hour barium and in the absence of drugs, purgatives, menstruation or other conditions modifying the vegetative nerve balance). The haustra of the stomach were in large, sweeping, semiglobular movements (Figs. 2, 3, and 4) which we have learned to associate with sympathetic preponderance. The influence of the sympathetic is suffi-

cient to reduce the smaller active movements of vagus influence, but not great enough to completely inhibit the stomach movements. This type of peristalsis of the stomach, as viewed by the fluoroscope, was constant in our cases.

The postural tone of the large intestine, after the twenty hour barium meal, showed large, wide haustra which we have learned to associate with sympathetic preponderance (Figs. 2 and 4) which may be compared with the normal colon innervation of Fig. 1. This type of haustration was also constant in the gastric and duodenal ulcer cases, and has proved of some value in the differential diagnosis. This type of postural tone also is shown in other sympathetic preponderance conditions as tetany, pregnancy with edema, deficiency disorders, essential hypertension, etc., but its presence with a history of stomach disturbance is suggestive of gastric ulcer and its absence is suggestive that the diagnosis should be other than gastric or duodenal ulcer.

The hydrogen ion concentration of the blood plasma in our cases of gastric and duodenal ulcer was constant upon the alkaline side of p.H.=7.40. (The p.H. was taken after the method of Hastings and Sendroy, Jr., with bicolor standards.) In other words, instead of an acidosis, there was usually an alkalosis in our cases. There have been very few reported studies of the blood plasma p.H. in gastric ulcer.

FIG. 2.—a, b, c, d, e. Gastric ulcer case with typical gastric ulcer history for twelve years, vomiting, pain, occult blood in the stool. The hypotonus (sympathetic preponderance) of the stomach and intestine is shown. The blood plasma p.H. was 7.60. After treatment this p.H. changed to 7.35. This man had considerable emaciation and gained approximately thirty pounds under the treatment. He was able to resume his rather laborious occupation of house builder within eight weeks.

It must be recognized that titrometric methods of measuring the gastric acidity and total acids may give inaccurate results as to the intensity of acidity in stomach conditions. In a study of the p.H. in gastric ulcer, Kauftheil and Porges (4) found subnormal or normal values in ulcer of the stomach, but in duodenal ulcer there was frequently an increase in stomach acids. In 157 cases studied by Pletnew he showed that gastric and duodenal ulcer often developed with a low acidity of the secretion.

In our study we found that the gastric and duodenal ulcer cases had usually an alkaline p.H. and sympathetic preponderance. On the basis of the atomic theory of disease (5), they would then have increased cell permeability and increased conductivity. They would be deficient in the substances which produce decreased permeability (chiefly calcium and magnesium). They would have an excess of the substances which produce increased permeability (chiefly sodium and potassium). Their blood balance would be upon the alkaline side and they require the acid producing substances (like calcium and magnesium).

For this reason the gastric ulcer cases were treated by the administration of calicum lactate and Collip's parathyroid extract, and by the Jarotsky-Coleman (6) diet of white of egg, butter, etc. In fact we have come to allow in the diet all vitamine A substances. We have endeavored to have the diet salt free (sodium free).

The basis of this medication was from the following belief, 1, that calcium promotes protoplasmic rigidity and its absence, ulceration in epithelial tissues; 2, that calcium salts produce acidity (lessened alkalinity of the blood plasma; 3, that Collip's parathyroid extract has been proved to aid calcium metabolism and will increase the blood calcium content.

In regard to calcium and protoplasmic rigidity, Salm Horstmar (7) in 1856 first proved that calcium was necessary to plants. Ringer (8), in 1883, showed that if the calcium was extracted from the water, that the epithelial and mucous cells became detached from the gills of fish and that worms in calcium free water disintegrated. In experiments upon the sea urchin larvæ, Herbst (9) found that in sea water from which the calcium was lacking, the epithelial tissues dissolved into their component cells. When these dissociated, but still living, elements were returned to calcium containing sea water, they reassembled and adhered to each other at their point of contact. In plants calcium exists in the middle lamellæ and in its absence some plants will disintegrate.

Calcium is, therefore, apparently necessary to the continuation of complete organization of the cell and, in its absence the cells, particularly epithelial cells, will disintegrate. The calcium is thought to exist in the confining membrane of the cell, and so be necessary to the framework of the cell.

In regard to the production of acidity, it is commonly thought that calcium, being an alkali, will produce alkaline conditions in the human body, but this is not so, as it has been abundantly proved by Salvesen, Hastings and McIntosh, Haldane, Hill and Luck, Gamble, Blackfan and Hamilton, Ludlum and McDonald and Keith Barrier and Whelan (10 to 14) that calcium salts injected or ingested into the body will alter the hydrogen ion concentration of the blood plasma toward the acid side (or decreased p.H.). The reason of this apparently lies in the fact that the

human body organization is not a simple chemical system with a simple dividing chemical point at neutrality (p.H.=7.0) between acid and base, but is a collection of colloid cells, surrounded by semipermeable membranes in an aqueous medium and, in consideration of acid base conditions, the colloid constitution and surface action of colloids must be considered. The human body is a polyphasic colloidal system so that organization or mechanism enters into its chemical reactions and surface action, alteration in the structure of the colloid (dispersion or coalescence), adsorption and disorption and the electrical double layer of Helmholtz in the surface film must enter into consideration. For vital activities cannot be explained upon a stoichiometric (or purely chemical) basis, but must be translated in terms of colloidal chemistry which is essentially chemistry of organization and balanced relation at surfaces. The human cell exists as an acid colloid particle surrounded by a semipermeable membrane in a more alkaline medium and the dividing point between acidity and alkalinity for this system is not neutrality (p.H. 7.0) but somewhere on the alkaline side of this, as the univalent cations (sodium and potassium) produce alkalinity and the bivalent cations (calcium and magnesium) produce acidity. In other words, in studies of the acid base conditions, colloid structure as well as chemical reaction must be considered and this neglect is one of the fundamental fallacies of acid base studies of the crushed whole blood (cell and plasma) as in the alkali reserve estimations. As we found in our gastric ulcer cases a predominant alkaline p.H. of the blood plasma, calcium salts (conveniently the lactate) seemed very appropriate and were used. The use of this calcium salt usually altered the p.H. toward the acid side. In addition, Grove and Vines (15) have reported good results in the use of calcium and parathyroid in chronic skin ulcers.

The parathyroid extract was given because it has been proved that parathyroid extracts preside over and are associated with calcium metabolism, and Collip has developed an improved parathyroid extract which has definite advantages and has been standardized in units according to its capacity to increase the total blood serum calcium in normal dogs. We had the good fortune to obtain this extract while it was in the experimental stage, for which we thank Dr. Collip and the makers.

The treatment of these gastric ulcer patients, then, consisted in the use of the Jarotzki-Coleman diet, the administration of calcium lactate in doses of fifteen to thirty grains thrice daily, and the administration of parathyroid extract one tenth grain thrice daily by the mouth and the intramuscular injection every second or third day of two units of Collip's parathyroid extract. In markedly alkalosed cases with a high plasma p.H. dilute hydrochloric acid or dilute phosphoric acid was given in addition.

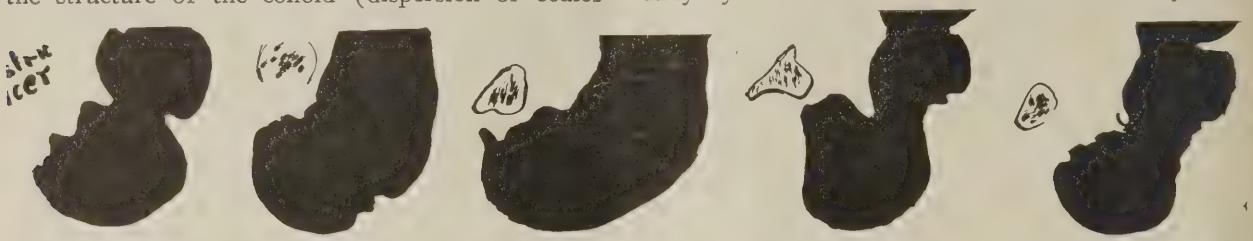

FIG. 3.—Gastric ulcer with typical history and occult blood. The patient made a good recovery within six weeks and occult blood has remained absent from her stools.

Under this treatment the patients gained in weight and improved in appearance. The occult blood in the stools disappeared in from four to six weeks which was taken as an indication of healing of the ulceration. The treatment was also used as a preliminary to operation with a view of aiding healing of the wound and also in certain cases after gastroenterostomy where occult blood persisted in the stool for some time after operation. The occult blood in these postoperative cases has disappeared under this treatment. Good results have been obtained in several cases of acute hemorrhage from gastric or duodenal ulcer by injection into the vein of 0.5 gm. of calcium chloride in 10 c.c. of distilled water, along with Collip's parathyroid extract hypodermically.

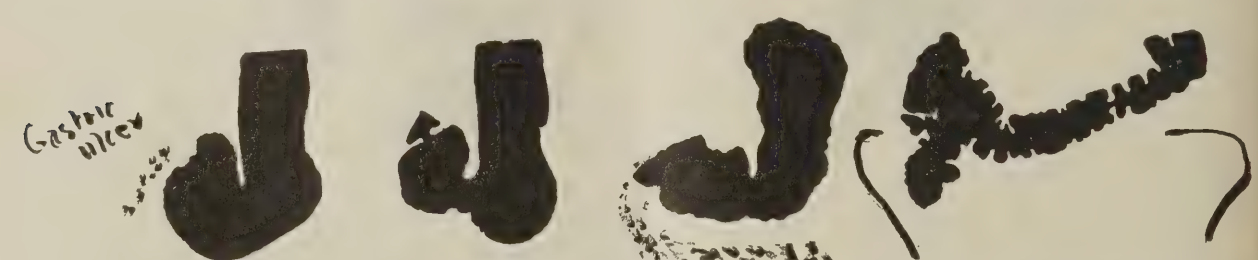

FIG. 4.—Gastric ulcer with typical history, vomiting, pain, loss of twenty pounds in weight; ninety-five pounds in weight, and occult blood. The postural tone and haustral arrangement shows the sympathetic preponderance. This patient had immediate improvement with a gain of thirty-five pounds in weight. The occult blood disappeared in five weeks and she has remained well for eight months.

The results of this treatment have been so satisfactory in gastric ulcer that, in our opinion, operation should be confined to those cases of gastric ulcer which show marked anatomic deviation and obstruction, or in cases where peritoneal hemorrhage is a factor. All other cases should have a trial of the calcium lactate and Collip's parathyroid.

Since writing this article there has come to hand an interesting study of the alimentary canal after parathyroidectomy by Spadolini (*Arch. di fisiol.* 1924. *22.* 339). He finds that, after parathyroidectomy, the principal cells of the stomach and the epithelium of part of the wall of the small and large intestine show various degenerative changes down to total necrosis. These are frequently associated with congestion, hemorrhages and edema of the intestinal wall. This work brings additional confirmation of the value of the parathyroid extract.

The author's references will appear in his reprints.

Physiotherapy in Hospital Team Work

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In selecting this title for my paper, it is my desire to bring out one of the greatest factors in the field of usefulness of physiotherapy. I want to show, if possible, how physiotherapy fits into regular hospital procedures and has established a place as a useful adjunct in general medical and surgical work.

GROWTH OF PHYSIOTHERAPY

Before the war the number of hospitals which gave any attention to physiotherapy could be counted on the fingers of one hand. When the government realized the responsibilities it was under, and the services that were due the wounded of the army and navy, it was not difficult for physiotherapy to show that there was a place for its functioning in order to attain better results in the treatment of patients in the government hospitals. At first the government was not very anxious to try out physiotherapy, but finally its worth became understood and the usefulness of its departments under the reconstruction services of the army and navy became more and more evident. In the army it was very difficult to convince the old time army surgeon that electricity and other physical measures could be of any real service, but due to the persistent efforts of the head of the Reconstruction Department in the Surgeon General's office and a few progressive surgeons in the navy, physiotherapy finally gained its recognition.

Since the war it has been functioning in the work of the Veterans' Bureau and now more and more hospitals are becoming interested in the line of work that is done by physiotherapy. The whole system of treatments is being studied with a view to eliminating the parts that could not stand critical inspection. Medical schools are at last taking it up and in the Bulletin of the American Medical Association published in October, 1925, there is an article on Physiotherapy in Medical Schools and Hospitals which shows that physiotherapy is being taught in many medical schools and that in September there were twenty-four hospitals which had departments of physiotherapy. Already the figures in this article are out of date because many hospitals have taken up the work since last October. Beekman Street Hospital in New York city, which has had a department of physiotherapy for the past year and a half, is now running at the rate of some sixty thousand treatments a year and has shown a steady growth from the time the department was first started. Industrial firms are becoming more interested in the possibilities of physiotherapy in the treatment of the industrial injured and the whole subject is gaining wider fields of action in a very steady manner.

DEFINITION

For the benefit of those who are not acquainted with the subject, it might be well to mention what physiotherapy covers. Physiotherapy is the name given to the treatment of conditions by nonmedical and nonsurgical procedures and using physical means to obtain the results desired. I do not mean to say that the results are always obtained, but the measures are used in an attempt to bring about the reactions that will be beneficial to the patient. The name itself was coined in the Surgeon General's office and is not as universally accepted now as it was some years ago. This is mainly because a number of nonmedical persons, in order to make money in a pseudoscientific way, have taken up the subject and call themselves physiotherapists, when really their knowledge is not sufficient to license them as masseurs. Last year the American Medical Association created a Council on Physical Therapy and it will not be long, I believe, before the name of this work will be universally adopted to be physical therapy.

METHODS OF PHYSICAL THERAPY

Undoubtedly the largest part of physiotherapy is treatment with electrical methods. Then we have the mechanical methods, massage, hydrotherapy and phototherapy, including the oldest form of treatment, heliotherapy. All these methods are used separately or together in an effort to induce an adequate reaction to the pathology when the body has been unable to respond as it should. Physiotherapy is and always has been composed of the following parts: Ninety-five per cent. ordinary common sense, when the condition is looked upon from a trained physician's viewpoint. Of the remaining five per cent., three per cent. may be called the understanding of the actual technic of giving treatments and the other two per cent. is a knowledge of what the physical forces can and cannot do.

RADIANT LIGHT

Heliotherapy is a subject that all trained medical men have a slight knowledge of and in this country it is not used as much as it is abroad. In considering this subject I would like to bring to your attention a statement made by Professor Leonard Hill last summer at an international congress in London, in which he said there is no difference in the quantity of ultraviolet light seven miles up in the air and at the seashore. This rather changes the view that heliotherapy can only be done in the higher Alps, because, as you know, ultraviolet light is the active principle of sunlight that we attempt to give our patients in this form of treatment. Phototherapy, the treatment with light, really includes heliotherapy and also the use of radiant light of the spectral kind that can be appreciated by the eye and radiant energy above and below the visible spectrum. The former is called ultraviolet light and the latter, infrared. I am not going into a lengthy discussion of the subject of physiotherapy because that would need one paper by itself. However, I wish to draw your attention to one fact and that is, that radiant energy has the ability to penetrate a certain distance into the skin and according to the laws of the conservation of energy, when any form of energy is stopped heat is produced. Therefore, with radiant light we have two

forms of heat, the actual heat given off by the incandescent bulb and also the heat that is formed within the tissue by the light being stopped therein. Consequently with light we can cause the formation of actual heat beneath the skin.

Only recently I was asked to inquire into a situation at a hospital in New York which made the staff feel that the light treatments as being given in the hospital were rather dangerous. I found that the patients were being treated with applicators containing electric light bulbs and that the entire portion treated and the hood containing the electric lights were being surrounded by heavy blankets to keep in the heat. This was worse than misdirected enthusiasm because the double heat, as one might call it, was so great that it even baked the enamel on the hood and severely burned the patients. All of you may have seen attempts made at light treatments in different hospitals where a basketlike affair was placed over a patient's foot with an electric light suspended from that, and the whole thing covered with bedclothes. This is decidedly the wrong way to use light in treatment. It is absolutely necessary that the air circulate under the applicator, whether it be a special light containing applicator or an ordinary cradle such as is used under bed clothes. Let me warn you all that should you "see the light," as one might say, and use phototherapy, you must not try to make the patient feel the maximum amount of heat; and also you must see that the part being treated is open to the air. In burn cases and badly infected areas, it is the custom at Beekman Street Hospital to throw a piece of mosquito netting over the whole apparatus so that the air can circulate and no flies and a minimal amount of dirt reach the part.

One more point before leaving phototherapy which most people do not realize. For years it has been a custom in different hospitals to expose indolent ulcers to sunlight and I myself have seen in many hospitals patients sitting with a wound exposed to the sunlight which is passing through a window to the part. The active principle of sunlight is ultraviolet light and ultraviolet rays will never pass through ordinary window glass. As an example of this fact, I do not think that anybody has ever noted that people get sunburned when sitting in sunparlors. Solariums as constructed today are nothing but overlighted rooms with no therapeutic value whatsoever.

HYDROTHERAPY

Hydrotherapy, which is a part of physiotherapy, is not being used as extensively today as it formerly was, especially during the lifetime of Dr. Baruch. It has its place in hospitals for chronic diseases, and especially where the patients are of the neuropsychiatric type. Nowadays the most useful form is the whirlpool bath where warm water is agitated by a stream of air passing through it. This is found to act as a very mild massage and is very sedative in the treatment of peripheral nerve injuries. It also is used in fractures where the union is almost complete, when it is desired to keep the skin and muscles in better condition than just letting them lie in a cast.

MECHANOTHERAPY

Mechanotherapy is still very extensively used in Europe, where there are all sorts of machines originated by an ingenious man named Zander. In this country, however, we feel that results obtained by these machines can be better brought about by the judicious use of exercise either given by or under the eye of a skillful physiotherapy technician.

MASSAGE

Massage has a definite place in general therapeutics. It is of such usefulness that had the older physicians not neglected its possibilities, we would not today have these trick cults flourishing throughout the country whose main idea is the possibly scientific application of massage.

THERMOTHERAPY

Thermotherapy is essentially the use of heat in the form of dry or moist air and its usefulness is not as great at present as heretofore, as radiant heat is far superior in most all cases.

ELECTRICITY

I will sketch briefly what can be expected with the use of electricity in treatments. We have available for therapy the old galvanic current, which is still best obtained from batteries; and variations of this current, such as the sinusoidal current and other wave currents of low voltage. The faradic current has a very limited field of usefulness and these two forms so far mentioned are used mostly for the stimulation of muscles that are in poor condition, or nerves that need stimulation. There is undoubtedly some chemical effect from the galvanic current which has a field of usefulness. We have two other currents, namely, the high frequency currents which are most popularly known today because of diathermy, and the static current which is the old current generated by friction and is peculiar in that it has extremely high voltage and practically no amperage or volume. The high frequency currents are used to generate heat by putting certain parts of the body as a resistance in the circuit. The static current is used for from very mild up to very powerful mechanical effects, and in a way it surpasses massage. It is the greatest means we have today to reduce congestion and infiltration in tissues.

I hope you can see from the sketchy outline of the subjects I have mentioned what forces physiotherapy can command that can be used for the benefit of the patient. It is not possible to enumerate all the conditions in which heat, mechanical exercise, or reflex reactions, such as can be brought about by use of these agents, can be of help. Standard medical and surgical procedures have been so studied and worked out in the years gone past that physiotherapy can never pose in any way as a competitor of such rational procedures. Any man who believes in the statements made by some of the fanatics, such as "the day of the knife is over" and all that, is not using his mental capacity as a physician.

Physiotherapy is undoubtedly the most modern and potent adjunct that has come into the field of therapeutics in many, many years. It has been able to make a place in the general hospital team work when conservatively prescribed so that the results that the surgeons and physicians desire to obtain, are frequently helped as to speed and perfection when physiotherapy is brought into play. I know of no condition, with the exception of superficial infections when treated with ultraviolet rays, in which physio-

therapy itself can assume the credit for bringing about a cure. It is not intended to be used actually to treat the condition as such, but, as I mentioned before in this paper, it is an attempt to change an inadequate reaction to the existing pathology into one that is adequate so that the patient *himself* gets well. Do not forget that it is ninety-five per cent. common sense and if it seems that a convalescence can be shortened, or resistance can be increased, or the reparative reaction of the patient can be whipped up to his advantage, then physiotherapy can be called on as a sort of "pinch hitter" to turn the tide into a more favorable direction.

Let me warn those who are thinking of taking up this subject, especially hospital men who feel that they should become the most modern in their treatment and encourage physiotherapy in their hospitals. Do not trust the prescribing of these measures to anyone but a physician. Note that I say physician as a medical graduate who has had special training in physiotherapy. The x ray man of a small hospital, because he has a knowledge of switches and currents, very frequently has the job wished onto him. That is very unfair to him and quite unfair to physiotherapy. With the courses that are available in recognized medical schools and hospitals today, men can be trained in six weeks or more to have a good working knowledge on the subject. These "get-smart-quick" courses that are foisted on the medical public by manufacturing concerns, where the entire subject can be "learned" in eight to sixteen hours of work in one week, cannot be recommended in any sense except as a slight introduction for a bowing acquaintance with the subject of physiotherapy.

It has been found advisable to leave the final word concerning the treatment of the patients to the medical man who is directing the department of physiotherapy. However, in order to encourage the other members of the staff to increase their knowledge of the subject, it is always acceptable to have them make out tentative prescriptions for treatments, but the entire responsibility for the treatments is on the shoulders of the director. The best cooperation between the department and the rest of the hospital staff is obtained by requiring the attendance of the director at the weekly field rounds which are the custom in all good hospitals. At that time the staff can ask questions regarding treatments and the director has an opportunity to see exactly what surgical treatments all the patients are getting.

One other point worth mentioning is that treatments cannot always be given personally by the doctors. The physiotherapy technician of today has an undisputed place of her own in this work, and should anyone think of enlisting the services of a technician, let me warn him to inquire fully into her training and experience. There are many socalled physiotherapists and technicians who know worse than nothing about the subject. The American Physiotherapy Association can always supply the best technicians.

I must admit that this paper is not of any scientific nature, but it is merely an effort on my part to bring to your attention the fact that decently understood and controlled physiotherapy is another tool in the tool box of the medical profession. It is worthy of more attention by the hospitals and the profession in general because it can so easily fit into the therapeutic team work and be a distinct aid to results that the physician and surgeon like to view with satisfaction.

40 West Fifty-first Street.

Pernicious Anemia*

Report No. 3

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At the last clinic held here August 11, 1925 (1) two men were shown whose symptom complex corresponded closely to that found in Addisonian Biemer anemia, which for many years has been designated as pernicious anemia. The subsequent course of those patients is as follows:

Case III.—(Record No. 5814)—This patient, at the time of presentation, was bedridden, and had a hemoglobin of twenty-seven per cent. and 900,000 erythrocytes, and a color index greater than 1. He was given mercurochrome intravenously (2) (twenty cc. of one per cent. solution) three times but continued to grow weaker and died on October 2, 1925. At autopsy the liver was found to be two finger breadths below the costal margin; the gallbladder markedly distended and would not empty by pressure. The bile was dark and thick and the walls of the gallbladder slightly thickened the common duct. The duodenum and lower portion of the liver were involved in a dense mass of adhesions which caused considerable constriction of the first portion of the duodenum, which explains some of his gastric symptoms, such as gastric retention and vomiting. As will be recalled, the clinical diagnosis in this case was scirrhous carcinoma of the stomach. The spleen was about one third larger than normal; the pancreas small and hard and coarsely granular. The tibia cortex was thin, the marrow cavity increased and filled with red marrow, which showed microscopically many megaloblasts, gigantoblasts, as well as primitive leucoblasts.

Case IV.—(Record No. 6806)—This patient, at the time shown, was in the beginning of a remission which lasted until about the first of November. From that date he went down in spite of treatment, which included four courses of mercurochrome intravenously (thirty c.c. of one per cent. solution), and died on December 26, 1925.

*From the Department of Internal Medicine, service of John W. Shuman, M.D., N.G.D.C.S. Read at a meeting of the Los Angeles County Medical Society (Santa Monica Branch).

The autopsy report was as follows: The areolar tissue was well preserved and markedly yellow in color. Spleen weighed 250 gms., two small infarcts, gallbladder not distended but contained three ounces of dark green thick viscid tenacious bile. Gallbladder mucosa had a fine granular feel; the stomach was thin walled, except in the pyloric end; the mucosa was atrophic as in atrophic gastritis. Bone marrow was yellow and fatty with no signs of redness about it. Just above the sigmoid region of the large intestine there was an area about six inches long of markedly thickened gut. Above this area the large intestine was greatly dilated and the walls were very thin. This specimen, together with the gallbladder, was submitted to Dr. Frank Sturdivant, pathologist to the Pasadena General Hospital for examination. He reported as follows:

"Spinal cord, no definite pathological changes noted. Gallbladder showed chronic cholecystitis. The microscopical findings of a chronic colitis, together with macroscopic findings of multiple diverticuli, are accountable for the constriction in the large bowel with dilatation and thinning of the walls above this point. While not often reported it is in my experience not uncommon. With the present views on pernicious anemia, one of the suspected contributing causes is an unknown infection involving the gallbladder and the intestines, especially the colon. These findings are in harmony with the clinical diagnosis of socalled pernicious anemia."

CONCLUSIONS

1. Our cases emphasize the importance of careful antemortem and postmortem study.
2. All our cases showed a pathological condition which could have caused grave pernicious anemia.

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The Diagnosis and Treatment of Displacements of the Semilunar Cartilages

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In making a survey of fifteen cases of removal of the cartilage of the knee joint during the past few years, we have interested ourselves in summarizing the important points in the diagnosis and operative technic, and have derived benefit from the study of this unique condition. This paper presents the conclusions obtained. The subject is always attractive as the lesions vary greatly. In no other part of the body do we find similar mechanical possibilities.

ETIOLOGY

In these cases the tear in the cartilage was due to injury while the knee was flexed and subjected to violence by rotation, as in rising from a kneeling position. Usually the cause was muscular effort, but in a few cases direct injury, such as a fall on the flexed knee, produced the usual condition. In one case, a mechanic kneeling before an automobile was struck on the knee by the axle of the car as it slid off a jack. In one case, typical as a tear of the anterior half, no history of any injury could be obtained. Flexion of the knee at the time of violence is regularly present. With rotation the tibia rotates outward and the femur inward. The cartilage is pinched between the bones so that a tear is started, loosening the more mobile anterior half or causing a split longitudinally, which resolves itself into one of the final forms. Two thirds of our cases were in males, as might be expected in any traumatic condition. All patients were adults, except one, a girl of fourteen, who fell directly on the flexed knee.

LESIONS

Conditions found on operating are shown in the illustrations. Except for the two cases in which the cartilages appeared normal, there were the following: one a loose anterior horn; one a loose tag from the anterior horn; two frayed at the inner edge; five longitudinal splits; and four bucket handles. In these bucket handles, the cartilage is first split; the inner half is dislocated to the middle of the joint, still attached at each end. It might be noted that in three of the bucket handle cases, the misplaced cartilage had been supposedly reduced by manipulation previously and yet at operation were found lying in the centre of the joint and had never been replaced. In two cases of unusual interest, it was the external cartilage that was loose at the posterior end. In each of these the injury was direct. In walking a marked click could be heard, and also felt when the knee was flexed. At operation, as the knee was moved, it was easy to demonstrate how the cartilage jumped forward with a snap in flexion, slipping back again between the two bones on extension.

SYMPTOMATOLOGY

As the diagnosis so often rests on the history, the subjective symptoms, and a negative x ray, rather than on objective signs in the knee itself, the story told by the patient is of prime importance. The nature of the injury, the description as to how the knee goes "out of place," or "catches" or "locks," must be gone into minutely. Also the reaction in the joint following each misplacement; the site of pain and tenderness; the frequency of misplacement, and the patient's own method of reduction. Locking, which is the most typical symptom, is by no means always present, and is often a temporary catch. Inability fully to extend the knee immediately after the injury indicates displaced cartilage and is the most positive sign. This symptom is usually absent in recurring attacks.

In the examination it is a good plan to watch the patient walk and stand with both legs bare. Limp, knee flexion, fluid in the joint and atrophy of the quadriceps can be readily observed. On having the patient bend both knees toward a squatting position, if he is willing, swelling, atrophy and limited motion become apparent. There is regularly present some atrophy of the quadriceps, and if the patient has been wearing a rubber knee cap for any length of time the atrophy may be extreme.

In the prone position, on palpation, the typical sign is sharply localized tenderness over the joint line one and a quarter inches to the inner side of the lower end of the patella. This point is over the internal cartilage in front of the internal lateral ligament. It is *the* typical point and was found sharply localized in four fifths of the cases. Motion is usually normal with no creaking, unless there is present a displaced cartilage, acute synovitis from a recent catch, a chronic arthritis from repeated insults, or some adhesions.

To rule out torn ligaments: With patient in prone position compare the two knees by testing normal knee first. With the knee completely extended, try to abduct. Absence of lateral chug indicates a firm lateral ligament. With the knee extended, try anteroposterior motions by gripping above and below knee. If absent, the anterior crucial is normal. In the sitting position with the knee flexed to a right angle, try forcibly anteroposterior motion with both hands clasping the upper calf. Firmness indicates a normal posterior crucial. While rotation in flexion is the force which catches and tears the internal lateral cartilage, it is well to remember that abduction is the force that tears the internal lateral ligament, hypertension tears the anterior crucial, and direct force in flexion tears the posterior crucial.

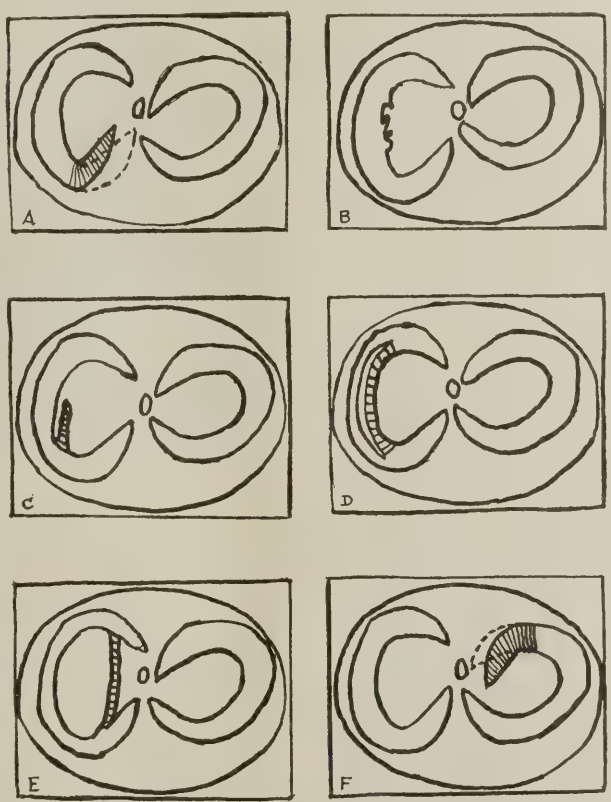

FIG. 1.—Showing the various conditions found in the knee joint upon operating.

DIAGNOSIS

In all of our cases the x rays were negative, and the negative x ray aids in diagnosis. Of course a coincident lesion is possible. The presence of loose bodies or an intraarticular fracture may change the diagnosis. Rarely an early tuberculosis may simulate a cartilage condition. Instability due to lax ligaments is found by testing and comparing the ligaments of both knees. In two of our cases showing lax ligaments, however, the history was positive and removal was followed by cure of the cartilage symptoms and general improvement in tone. Enlarged retropatellar fat pad may simulate, but the catch is slighter; there is creaking under the patella especially in forcible extension by the patient himself; and there is a distinct doughy thickening at the sides of the bone. Adhesions should show limited motion and irregular tenderness. Chronic arthritis should show the usual changes, such as swelling, limited motion, and x ray findings.

TREATMENT

In the case seen at once after the accident, with the patient walking on a flexed knee, the indication is to reduce the cartilage which blocks full extension. With the patient lying down on his back, the leg is gently flexed on the thigh to about forty-five degrees below full extension; then the leg is rotated inwards and abducted, by means of the hand and the knee of the operator. This opens the space for the cartilage to slip back and it works particularly well if the patient is under an anesthetic. If the patient is not under an anesthetic, ask him to kick out in extension while maintaining inward rotation. Easy complete extension usually means reduction but in bucket handle not necessarily.

Authorities differ on whether to splint for two or three weeks to give complete rest and healing or to allow weight bearing with the knee splinted in extension. Confinement gives the cartilage time to repair but may mean adhesions and atrophy which disable for some time. We have usually allowed weight bearing except in the marked case with first displacement. The use of a Thomas heel undoubtedly helps to maintain abduction and inward rotation of the leg on the thigh, guarding against recurrence.

In the latter case, with repeated displacements, the cure is effected by removal before chronic inflammation and lax ligaments cause permanent damage. Just here it must be emphasized strongly that such opening of the joint does not cause a "stiff" joint. This is the general impression among the laity, nurses, and physicians; that incision and removal of the joint fluid is followed by stiffness. In almost all cases lengthy arguments precede consent to operation.

The method of Sir Robert Jones is preferred. The preparation should be a thorough two day preparation and the strictest technic used to prevent infection, such as the use of instruments only in the wound, instead of fingers. The operator should have two assistants, good light, a tenotomy knife, and several blunt hooks in readiness. The tourniquet aids greatly

in keeping a dry field and prevents blood from collecting in the joint. The leg is wrapped in sterile bandages from toes to knee and the sheet caught firmly just above the knee, with a small area of skin exposed. The operator sits on a stool with the patient's foot in his lap. The usual curving incision is made about two and one half inches long, the capsule split, and the joint opened. By hook retraction, careful inspection is made to determine the condition of the cartilage, using a hook to lift the free inner edge. Redness of synovia due to irritation is often present. It is best to excise as much as possible, not only the affected part but the remainder which is adherent to the capsule. In doing this a small tenotomy knife is best or else Freiberg's modification. Rarely the posterior horn must be entirely removed, in which case a second incision may be necessary back of the lateral ligament. In one of our cases of external cartilage, in which the location of the click was uncertain, the patella was split longitudinally. The wound is closed in layers and a splint applied for ten days. Massage and gentle active movements are encouraged and the free use of the limb after three weeks, if healing has been normal.

It has been noted that a branch of the internal cutaneous nerve may get caught in the scar tissue causing local tenderness. One of our patients had this happen and the scar was excised under local anesthesia with good results.

The prognosis is, as a rule, excellent. If arthritis, joint irritation, or lax ligaments are present, a more guarded prognosis should be given.

CONCLUSIONS

1. In cases of displaced cartilage, the history of injury in flexion is of great importance, for the knee on examination may appear normal.
2. Lack of complete extension and the typical point of tenderness are characteristic symptoms.
3. It may be impossible to prophesy whether the cartilage will appear normal or not and on which side the trouble lies.
4. Lax ligaments are often encountered, and a history of catching or slipping due to such may simulate a cartilage condition.
5. The laity in general has to be informed that operation does not mean a stiff joint.
6. The aftertreatment should be followed up with considerable care.
7. The operation should be attempted under ideal conditions only.

40 North Street.

The Nonsurgical Constipations, Functional and Mechanical*

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Constipation, while one of the most common conditions, does not receive the degree of attention from the profession that it deserves. We are too likely to underestimate the importance to the patient of this complaint. Many of us treat the disturbance in a more or less routine manner, making no effort to discover the particular causative factors existing in the individual case. The unfortunate result of this neglect is that the patient, as a rule, wanders from doctor to doctor and finally resorts to quacks.

In this paper I shall show that every case of constipation presents a definite clinical problem, that widely diverse factors may cause the condition, and that no examination is complete until a thorough study has been made to determine the possible mechanical and physiological causes operative.

The subject of the mechanical constipations is a broad one and, since the advent of röntgenology, much has been written in this field. The functional constipations, on the other hand, have not received such careful consideration. Their common classification into tonic and atonic groups is not consistent with recorded observations and with the present day views of the physiology of the gastrointestinal tube. It is for this reason that I am urging a classification of the functional constipations based upon the established tenets of physiology. I am using the word constipations in the plural advisedly, in order to indicate that these conditions may be associated with diverse types of underlying disturbance.

*Read before the Eclectic Medical Society of Greater New York, November 10, 1925.

INNERVATION OF THE INTESTINE

The comprehension of the functional constipations presupposes a knowledge of the innervation of the intestine and of the two antagonistic systems of extrinsic nerve fibres, namely, the sympathetic and the parasympathetic nerves. The theory of sympathetic-parasympathetic antagonism enunciated by Eppinger and Hess (1) is one of the basic ideas underlying the study of the functional constipations. The vagus, the principal component of the parasympathetic system, is the motor nerve of the stomach and intestines. It is directly antagonistic to the sympathetic fibres coming by way of the splanchnic nerves, whose function is to inhibit the movements of the stomach and intestine. The nerve fibres mentioned above pierce the wall of the gut and terminate around the plexuses of Auerbach and Meissner. In addition to these fibres, others derived from the vagus nerve form plexuses on the serosa of the intestine; from these plexuses fibres pass directly to the muscular layer of the gut, that is, independently of the Auerbach plexuses.

The plexuses of Auerbach and Meissner are the relay stations through which the extrinsic nerve fibres, including the vagus and the splanchnic nerves, influence the movements of the gut. Auerbach's plexus lies between the circular and the longitudinal fibres of the muscular layer; Meissner's, in the substance of the muscularis mucosæ. The Auerbach plexuses are also of interest in that they are capable of performing some of the functions of the colon independently of the extrinsic nerve fibres.

By reason of its double innervation of the intestine,

the vagus, when stimulated, may produce either a peristaltic contraction or a spasm, depending upon which group of its fibres is being stimulated. If the portion of the vagus that reaches the Auerbach plexuses is irritated, a peristaltic contraction will result; whereas, if the fibres that go directly to the muscular layer are stimulated, a spasm will be produced.

FIG. 1.—The ascending type of constipation. A twenty-four hour barium plate. The barium has reached the end of the first portion of the transverse colon (neuromuscular ring of Keith). Note that the cecum is dilated and down in the pelvis, apparently held there by adhesions.

Peristalsis may result also from the independent action of the nervous structures located in Auerbach's plexus. For this purpose, it requires an exciting factor. The principal exciting factors of independent peristalsis, as mediated by the plexus of Auerbach, are as follows:

1. The normal contents of the bowels.
2. The hormone cholin, furnished by the intestinal walls. Zülzer (2) has prepared and described a peristaltic hormone, called neohormonal, which is derived by an extraction process from the mucous membrane of the stomach and the spleen of animals.
3. The hormones secreted by certain endocrine glands, principally the thyroid and the hypophysis.

Recalling the fact that the vagus and the sympathetic nerves to the gut are antagonistic, one can easily understand how disturbances of these two nervous units may produce a condition of functional constipation. When the sympathetic innervation of the gut is overactive, the motor nerve of the colon is inhibited and a hypokinetic type of constipation results. When the stimulation of the vagus fibres to the gut is excessive, peristalsis may be heightened to such a degree as to produce diarrhea, on the one hand, or localized spasms of the gut, on the other. This illustration should serve to show how either of two entirely different mechanisms may produce constipation, and how essential it is to differentiate these two types.

The functions and forms of motion of the colon may be described under the four following heads:

1. A mixed motion is to be found in the cecum, ascending colon and the first third of the transverse colon. A contracting ring, the neuromuscular ring of Keith, forms at the junction of the first with the middle third of the transverse colon, with the result that the contents of the cecum and ascending colon are prevented from being propelled further until decomposition, fermentation and resorption have been completed.

2. Peristalsis is characterized by a wave of contraction preceded by a wave of relaxation. This function is most powerful peripherad to the neuromuscular ring of Keith. A single wave may transport the colonic contents beyond the splenic flexure or even as far as the sigmoid.

3. Tonic contractions of the gut may take place in various segments, thus forming an obstacle to the forward propulsion of the contents. The contractions may last only a few minutes or as long as hours; they are most common at the distal end of the transverse colon and in the descending colon. Such misplaced and mistimed contractions may be responsible for the condition popularly called "cramps."

4. Defecation is a mechanical process operating independently of the functions enumerated above. Constipation may result from functional defects of the colon above the rectum, and, nevertheless, when the intestinal contents reach the rectum, they may be

FIG. 2.—The hypokinetic type of constipation. Forty-eight hour barium plate, no defecation. Note that the entire colon is filled.

expelled immediately. On the other hand, the rectum may take part in the production of a type of constipation known as dyschesia, which is usually a secondary manifestation, rarely a primary condition. The great factor in the production of dyschesia is the use of the rectal enema to relieve constipation arising elsewhere. As a rule, the contents of the rectum and sigmoid are

expelled in one movement. The daily act of defecation is largely regulated, under normal conditions, by the four functions enumerated.

FUNCTIONAL CONSTIPATION

By functional constipation is meant a condition that results not from mechanical abnormalities affecting the gut, but from a disturbance of the balance of the motor and inhibitory nerves. The terms tonic and atonic constipation are still commonly used, but physiologists have long since shown that the conditions that their names imply do not exist. The theory of muscular relaxation, which must necessarily enter into an explanation of constipation on an atonic basis, was discredited by physiologists over twenty years ago.

Fig. 3.—The dyskinetic type of constipation with dyschesia, due to abuse of enemas. Seventy-two hour barium plate. Note the spasm in the descending colon and the accumulation of barium in the ampulla.

About thirty-five years ago, Nothnagel denied the theory then in vogue that functional constipation was due to an inherent weakness of the muscular walls of the intestine. He defined this condition as an abnormal state of the nervous mechanism controlling the peristalsis of the colon and rectum, but declared the cause of the disturbance to be unknown. To Nothnagel belongs the credit for invalidating the misleading terms "tonic and atonic constipation."

Many subsequent experimental and anatomical investigations have since confirmed Nothnagel's theory. Adolph Schmidt made a last serious attempt to shake this theory by bringing forth an opposing one of his own. Schmidt advanced the hypothesis of a condition of hyperpepsia of the small intestine in functional constipation. He assumed that increased digestion and absorption from the small bowel leave an insufficient residue in the colon to initiate the act of defecation. But Schmidt's view is untenable, because the diminished quantity of waste matter in constipation is readily accounted for by increased absorption resulting from retention in the colon.

Gustav Schwarz (3) in 1912, as a result of his röntgenological studies, divided functional constipation into four types as follows:

1. The ascending type. In this type a constriction forms at the neuromuscular ring of Keith and interferes with the forward propulsion of the intestinal contents.

2. The hypokinetic type. This type involves the entire colon, producing sluggish bowel activity. It may result from a depression of the vagus or motor nerve or from an overactivity of the inhibitory splanchnic nerves, or from a depression of the Auerbach plexuses themselves.

3. The dyskinetic or spastic type. This form usually begins in the transverse colon and progresses peripherally. It is characterized by an interference with peristalsis due to spasm. The dyskinetic type of constipation results when the vagal fibres that go directly from the serosa to the muscular layer are overstimulated. Irritation of the vagal fibres that act via Auerbach's plexuses would produce diarrhea.

4. Dyschesia or rectal constipation. This type is readily recognized by rectal examination. A knowledge of the existence of the dyschesic type of constipation is important, inasmuch as the treatment of this type differs from that of the others. In dyschesia masses may accumulate for as long as three or

Fig. 4.—Asthenic patient with prolapsed colon who did not suffer from constipation. Twenty-four hour barium plate, with one bowel movement. Note that the hepatic flexure is at the level of the crest of the ilium and the splenic flexure is only slightly above this level. At forty-eight hours, the colon was empty.

four days before being expelled. The presence of such masses in the rectum, however, is not constant; in some cases the rectum will be found to be empty for as long as twenty-four hours after defecation.

ETIOLOGY OF FUNCTIONAL CONSTIPATION

Dietetic.—An insufficiency of roughage in the diet is most important. When the dietary is insufficient or does not contain enough indigestible residue, the normal peripheral stimulant to peristalsis is lacking. Because of the fact that their food was so much more refined, the upper social classes in Europe before the war were apt to suffer from this type of constipation. During the war, as was pointed out by von Noorden (4), this type of constipation disappeared.

Sedentary habits have often been given as an important cause of constipation, but the truth of the matter is that the eating habits of the sedentary person rather than his occupation cause the condition. This contention can easily be proved. Patients with fracture, necesarily confined to bed for weeks at a time, do not suffer from constipation when they receive a full mixed diet. However, if their dietary is reduced to soups, cereals, etc., they eventually become constipated.

Endocrine. — Conditions characterized by a diminution of the endocrine secretions that normally augment peristalsis may give rise to a hypokinetic form of constipation. Hypothyroidism and hypopituitarism come within this category.

States of worry and excitement, by stimulating the sympathetic nervous system, are capable of causing constipation of the hypokinetic type. Cannon (5) has emphasized the important part that the emotions may play in disturbing the balance of the nervous control of intestinal movements and function.

FIG. 5.—Same patient as in Fig. 4, after barium enema. The plate shows a redundant sigmoid; nevertheless, there was no constipation.

DEPRESSED EXCITABILITY OF THE PLEXUSES OF AUERBACH

The activity of the plexuses may be depressed by toxic causes, by nervous reflexes or by impulses from the central nervous system. Unquestionably, there may be a constitutional hypoexcitability of the nervous apparatus of the bowel. A breastfed baby or a young child whose bowels have not yet developed for cellulose digestion may be constipated.

ABNORMAL EXCITABILITY OF SYMPATHETIC NERVES

The excitability of the sympathetic nervous system, which inhibits intestinal movements, may be enhanced; or the vagus, on the other hand, may be unduly depressed. This syndrome produces a typical hypokinetic constipation. Nicotine may produce constipation by stimulating the sympathetic nervous system; morphine, by depression of both the vagus and its antagonist.

ABNORMAL EXCITABILITY OF VAGUS

An increased tone of the vagus nerve fibres may produce diarrhea, when the fibres that pass to the plexuses of Auerbach are overstimulated. On the other hand, if the irritative impulses are conveyed via the fibres that pass directly from the serosa to the muscular coat, spasmodic contractions will result. If the overactive vagal impulses were uniformly distributed throughout the colon, the natural result would be diarrhea; but the spasms are usually restricted to small segments of the bowel, with the result that peristalsis is impeded. The agents that are most likely to produce this type of constipation are psychic causes and such drugs as psysostigmine and pilocarpine. Hanneman (6) has adduced evidence to show that neurotic overexcitability is a primary factor in the production of dyskinetic constipation. He reports good results from psychotherapy in appropriate cases.

DYSCHESIA

Rectal constipation may result from a loss of the sensitiveness of the defecation reflex. This condition may ensue from a continued habit of suppressing the normal reflex, as a result of which the nerve endings in the rectum finally become insensitive to the normal impulse.

MECHANICAL CONSTIPATION

Mechanical causes may account for some types of constipation, but their importance has been greatly overemphasized. Lane has laid a great deal of stress upon the importance of kinks in the ptotic transverse colon as the cause of constipation. His views have not gained general acceptance. Röntgenologically, it is a common finding to observe patients of the asthenic type with marked prolapsus of the transverse colon who do not, nevertheless, suffer from constipation. This state of affairs is illustrated in Figs. 4 and 5. Furthermore, constipated patients with such prolapse can be cured of their constipation without undergoing operation. A person of the asthenic habitus, with whom a general coloptosis is naturally associated with a neuropathic constitution, may at the same time suffer from functional constipation on account of his predisposition to anomalies of the neuromuscular

apparatus. Therefore, when one finds constipation associated with anatomical abnormalities, he should not neglect to inquire also into the functional state of the vegetative nervous system controlling the state of the bowel.

Weakness of the voluntary muscles that take an active part in the act of defecation is usually found in women after several childbirths; nevertheless, such weakness causes constipation in only a small percentage of women and it does not, as a rule, aggravate a condition of constipation already existing.

TYPES OF MECHANICAL CONSTIPATION

The principal types of mechanical constipation are: 1, the ascending type, and 2, the transverse type. There are, of course, many other forms of mechanical constipation, but the discussion of these types will be omitted, as it does not come within the purview of the present paper.

Ascending type.—This form may result from the presence of bands of adhesion affecting the ascending colon or from a large, relaxed and too freely movable cecum.

Transverse type.—In this form the transverse colon is prolapsed into the pelvis, forming a V shaped kink.

DIAGNOSIS

In the differential diagnosis of the constipations it is necessary to consider the following points:

1. Is the constipation mechanical or functional in origin?

2. If a mechanical cause is found, is it so serious as to demand surgical intervention; or will appropriate medical treatment bring about relief?

3. If the constipation is functional in origin, to which of the four types enumerated above does it belong?

Clinical aids to diagnosis.—If the complaint is centred on a lack of evacuation and there are no stomach complications, no colicky pains or other discomforts, the most probable cause is a hypokinetic type. If, on the other hand, the constipation is accompanied by colicky pains, meteorism and borborygmus, one's first thought should be of the dyskinetic type of constipation, so commonly associated with overactivity of the vagus. A rectal origin of constipation may be evidenced by a sense of fullness and pressure in the pelvis and by a frequent physiologic urge. The diagnosis should be established by digital examination. The ascending type of constipation is apt to be associated with fermentation or putrefaction.

X ray examination most important.—The most important part of the investigation of a case of constipation is the röntgenologic examination. This fact is illustrated by the x ray pictures that accompany this article.

TREATMENT

Intelligent treatment presupposes an exact knowledge of the type of constipation existing in a given case and of its causative factors with reference to the nervous system. No routine treatment of constipation is possible. It is obvious that the treatment that would be proper for a case of hypokinetic constipation would be entirely inappropriate in one of the dyskinetic type, of the ascending type, or of dyschesia. It is necessary to direct the treatment to the etiological factors.

Even in the hypokinetic type of constipation there is always also some degree of spasm. Therefore the treatment of any existing spasmophilia should be the first consideration. The drug that is most efficacious for the relief of spasm is atropine. Great care must be exercised in regulating the dose of this drug, because small quantities of atropine stimulate the Auerbach plexus, while large quantities inhibit it. Even after the condition is apparently cured, the atropine treatment must be continued for months afterward. In addition to atropine, other antispasmodics, such as bromide and luminal, may be used.

In the treatment of hypoperistalsis every effort should be made to discover the cause. Frequently various endocrine products, such as pituitary extract and Zülzer's neohormonal, may be employed. The vegetable or mineral purgatives are sometimes required. While these purgatives are being given, the patient must be kept under observation and the dose should be reduced gradually to nil.

Colonic irrigation should be employed only when there is local irritation in the sigmoid or rectum. For this purpose two hundred cubic centimetres of oil is best.

Some persons state that they are unable to have a movement until they smoke, drink a glass of water or go through some other preliminary performance. It must be understood that the defecation following such measures is attributable not to a direct action upon the Auerbach plexus but to the diffusion downward of an impulse that starts in the duodenum.

In certain psychoneurotic patients psychotherapy may be used in the treatment of constipation. Space does not permit of a consideration of this subject here.

DIET IN TREATMENT

Dietetic treatment is an important part of the measures to be employed in combating constipation. As a rule a diet of greater bulk with a larger amount of roughage is to be recommended. Stereotyped diet lists that pay no attention to the racial and individual prejudices of the patient are to be deprecated. The administration of bran is a useful adjuvant measure to the bulky diet.

In arranging a diet for the patient with the ascending type of constipation, it is advisable to start with a lighter diet and to gradually increase its bulk. First, farinaceous foods should be used, and then the vegetables should be increased gradually until the bulky diet commonly employed in the treatment of constipation is attained.

The treatment of dyschesia is important, but space does not permit of its consideration here.

SUMMARY

The nonsurgical constipations may be divided into two groups, namely, 1, those that are of mechanical origin, and 2, those that are of functional origin. But even in those cases in which röntgenological study shows a definite mechanical defect, the functional factor, i. e., a disturbance of the balance of the nervous control, is often the essential cause of the constipation.

A knowledge of the physiological action of the nerves that control the intestinal movements is essential to an understanding of the functional constipations. The most rational classification of these con-

stipations is that of Gustav Schwarz. It is based upon the present day conception of the nervous control of the movements of the colon. According to this classification the functional constipations are divided as follows: 1, the ascending type, which is commonly associated with pericecal adhesions, typhlitis, chronic appendicitis, and cecum mobile; 2, hypokinetic constipation, due to an underactivity of the motor vagal apparatus or an overactivity of the inhibitory sympathetic apparatus, or, just as important, an underexcitability of the Auerbach plexus itself; 3, dyskinetic constipation, due to an overactivity of the vagal fibres that pass directly from the intestinal serosa to the muscular layer, resulting in spasms; and 4, dyschesia or rectal constipation, due to a habitual suppression of the physiological urge.

The principal causes of the functional constipations are an insufficiency of roughage in the diet, diminution of the endocrine secretions that normally augment peristalsis, constitutional depression of the excitability of the plexus of Auerbach, overactivity of the sympathetic innervation of the gut, overactivity of the vagal innervation, and habitual neglect of the physiological call.

Whenever a patient gives constipation as his principal complaint, a detailed study must be made to determine the specific causative factors operative in the individual case. The most important part of this study is the röntgenological examination. A routine treatment for the functional constipations is illogical. Rational therapy is dependent upon the specific etiological factors in the given case.

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A Plea for Early Operation in Diseases of the Gallbladder

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The medical literature seems to abound with ever increasing experience in gallbladder surgery, but there seems to be no unanimous opinion as to the operative indication for the diseases of the gallbladder and bile ducts.

Some surgeons recommend immediate operation, others late operation and others are opposed to any operative intervention. It seems rather strange that we cannot establish a definite operative indication, as in appendicitis, in order that the practitioner may make a definite decision for or against operation. The infection of the gallbladder may manifest itself in various ways. At operations all types of biliary conditions are seen, ranging from the simple inflammation of the gallbladder to the severest form of gangrene with perforation and peritonitis.

Frequently the inflammation will extend to the large organs, such as duodenum pylorus, head of pancreas and lymph spaces. As the inflammation of the gallbladder increases, the pressure in the bladder becomes more severe and the gallbladder distends until it bursts.

The great amount of pressure on its walls distends the bladder and this pressure is distributed equally on all its sides. The neck of the gallbladder distends until the impacted stone floats up and allows the infected bile to flow into the cystic and common ducts.

If the calculus does not float up into the bladder, some of the calculi remaining in the cystic and common ducts cause an infection of the duct and dilatation of the same with an infection of the surrounding tissues, which results in a dangerous condition for the patient. The pathological condition of the common duct will invariably follow if the diseased gallbladder is not removed. The common duct infection is preventable if the infected agent is removed early. That infection is a causative agent in gallbladder condition needs no proof. In case of the appendix, where inflammation spreads rapidly, the life of the individual is at stake, and it has been recognized after many years of argument urging surgeons not to wait, but to operate immediately as soon as the condition is diagnosed. In gallbladder conditions, because the apparent danger does not become so urgent, the tendency is to delay operation. The pathological complications which result from waiting will prove my contention that operation should be performed immediately.

I will cite a few cases which will prove that in diseases of the gallbladder operation should be as early as in acute appendicitis.

Case I.—Mrs. L. came to my office May 6, 1923, complaining of severe pain in the right upper abdomen. Her previous history showed attacks of indigestion, as she described it, for many years. This present illness started a few hours before coming to my office. She was seized with severe cramps. An examination disclosed severe rigidity over entire abdomen with shock. The patient was sent to the hospital. Operation showed a perforated bladder. The patient made good recovery.

Case II.—Mrs. M. Was called to see patient who was complaining of severe abdominal cramps. For the past ten years she had been complaining of attacks of pain in the region of the gallbladder. For the past few days she had severe attacks with vomiting. Ex-

amination showed rigidity of the upper abdomen and distended gallbladder. I advised operation but the patient refused. The next day the patient was sent to the hospital and I operated and found a perforated gallbladder. This shows that we should not procrastinate; even a few hours may cause severe abdominal crises.

Many medical men agree that some patients with gallbladder disease will recover without operation. Some patients with acute appendicitis will also recover without operation. This does not prevent the surgeon from operating in order to avoid severe abdominal conditions. There is I think sufficient reason for instituting the same treatment for gallbladder diseases. If we would treat gallbladder conditions the same as we treat appendicitis, we would reduce the mortality from gallbladder disease and probably obtain the same results as in appendicular conditions.

The dangers of operating in acute attacks of cholecystitis have been greatly exaggerated. Such danger is found to be no greater than operating in acute appendicitis. Delay in operating may cause damage to the surrounding tissues.

CONCLUSIONS

1. Cholecystitis is a surgical condition.
2. Common duct infection is a preventable condition in most cases.
3. Cholecystitis should be operated in acute stages.
4. Waiting for it to subside will cause a pathological condition in the surrounding structures and will endanger the patient's chance of recovery.
5. The gallbladder should be removed in all cases unless contraindicated.

1269 Grand Concourse.

Hypoleucocytosis Reversed by Nonspecific Protein Reaction

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FOREWORD

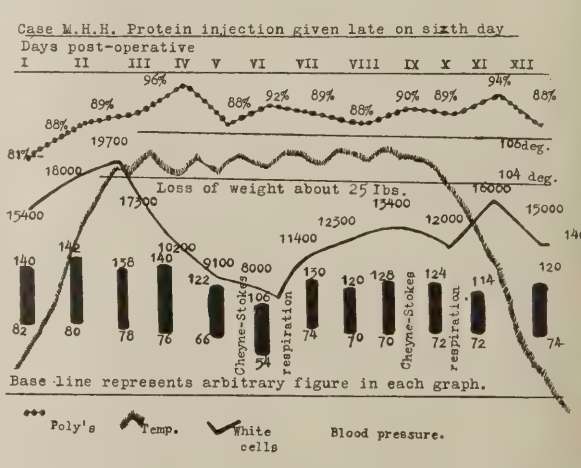
I desire to report this single case of hypoleucocytosis (1) reversed by nonspecific protein reaction for the following reasons:

1. The completeness of the clinical and laboratory data involved point away from, rather than in the direction of, accident, coincident, or unknown factor, as here operative.
2. The special application, if any, of a well known procedure to young persons possessed of good vitality, seems well illustrated by the sequence of events in this case.
3. The use of this procedure in selected cases requires further study by other physicians: and it is hoped that they will give the matter critical study.

REPORT OF CASE

Case.—M. H. H., female, aged twenty-six, nullipara, white, native of the South, was admitted to Stamford Hospital on September 5, 1925. She had discharging ears and high fever. Six days previously the patient felt ill, but went swimming. The following day she felt worse. Subsequently pain developed in the left ear, then pain in the right ear. Dr. William B. White was called as consultant and a bilateral incision of tympanum done. This was followed by a fall in temperature, and later a rise. This was repeated two days later, and was also followed by a fall then a rise in temperature. Mastoid "tip tenderness" and redness developed. The renal and urinary systems were negative; the pulmonary system revealed slight cough for several weeks; the cardiac system gave no symptoms; no vomiting or gastrointestinal symptoms. There was slightly decreased mental acuity, but no other nervous symptoms. There had been suppression of the menses, for three months.

There had been no previous serious illness, and no operations. Her father died twenty-seven years ago of typhoid fever; mother and brothers were living and well. Hygiene and environment had been excellent throughout life; no alcohol or tobacco. Physical examination, on admission showed T:102, P:86 and R:22. The patient was a well developed adult white female. There were no signs of cranial nerve involvement; both ears were discharging; mastoids were tender; neck was negative. The chest showed slightly harsh breath sounds in both apices, no râles, no dulness. The heart showed no valvular lesion; bradycardia. The abdomen was normal. Reflexes were diminished. There was no Kernig's sign.


Case M.H.H. Protein injection given late on sixth day
Days post-operative
I II III IV V VI VII VIII IX X XI XII
Loss of weight about 25 lbs.
Cheyne-Stokes respiration
Base line represents arbitrary figure in each graph.
Poly's
Temp.
White cells
Blood pressure.

CONDUCT OF THE CASE

Röntgenological study showed bilateral mastoid involvement. Bilateral mastoidectomy was done on September 7, 1925, by Dr. William B. White, of Stamford. About twenty-four hours later the temperature rose suddenly to about 103°, and Dr. William Scrutan, otologist, of New York, was called in

consultation, who doubted sinus thrombosis. Radiographic study revealed a central pneumonia of the right lung. Later in the day the signs became evident as the whole lung was rapidly involved.

The accompanying chart shows with sufficient accuracy the salient features of the case from this point forward. When the leucocyte count reached 8000 in its steady fall, the condition of the patient was so extremely precarious that we decided, after consultation with Dr. Alfred G. Henderson, of Stamford, to try the nonspecific protein reaction. Accordingly following the suggestion of Graves (2), we gave one c.c. of sterile skimmed milk intramuscularly. Within twelve hours the effect (if it was an effect) was dramatic—improved blood pressure, leucocyte count, mentality, decreased delirium, improved respiration, pulse, etc. The subsequent course of the case was uneventful and a slow crisis occurred on the tenth day. The patient made an uncomplicated recovery and is well at her home in the South at the date of writing.

THEORETICAL CONSIDERATIONS

The basis of employment of the nonspecific protein reaction was the well recognized fact that clinically immunity production and high or rising leucocytosis go hand in hand. Obviously the increasing gravity of the disease in this case may have been due either to lowered pneumococcus opsonin, or diminished phagocytosis, or both. Without attempting any lengthy discussion of the many aspects of immunity involved, which I am not competent to discuss, I would nevertheless like to hazard a guess as to the cause and effect. It seems possible to me that for some unknown reason—possibly prior exposure to the specific organism (pneumococcus? the negative blood culture and absence of sputa make organism doubtful) in the middle ear—the defenses of the body became in a measure tolerant to this antigen, and as a consequence the bone marrow, spleen, liver, thymus, lymph glands, etc., failed further to respond by leucocytosis. The milk injection then not only increased the specific ("anti-milk") antibody function, but also all the antibodies in the blood. Phagocytosis and immunity were produced and the emergency was met.

CONCLUSION

Where hypoleucocytosis is met with during the course of lobar pneumonia in young persons whose resistance we should expect to be high—i. e., not in Type III, senile, postexanthematous, terminal, pneumonias—it is possible that this procedure is of value.

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Experimental Investigations Into the Action of Salvarsan

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(*Translated by Edward Ahlswede, M.D., Hamburg*)

(*Concluded from page* 509)

The solutions of the p-oxy-m-aminophenylarsinacid only reduce very slowly and feebly in low temperatures. One can observe that living yeast cells if treated with this substance do not stain brown with an ammoniated silver nitrate solution, hence they cannot have bound the arsin acid. On the other hand, the spirochetes treated *in vivo* with salvarsan still possess reducing properties. These reasons therefore exclude the alteration of salvarsan into p-oxy-m-aminophenylarsinacid, as the effective acting substance *in vivo.*

The p-oxy-m-aminophenylarsinoxide must also be eliminated as the possible primary alteration product of salvarsan *in vivo,* contrary to all assumptions up to date which I have endorsed for some time. The first argument against the primary development of p-oxy-m-aminophenylarsinoxide and its part as an effective ingredient is the fact that living cells which are treated with a one per cent. solution of this substance and are then rinsed and treated with an ammoniated silver nitrate solution, only stain feebly brown, thus having bound only comparatively little of the substance. This is not surprising as we know that only more pronounced lipoproteid soluble than water soluble agents, that is practically water insoluble agents, are selectively bound by spirochetes, whereas the oxide mentioned is readily soluble in water. Furthermore, as living yeast cells (these we emphasize here, react exactly in the same way as living spirochetes), if treated with a solution of one to one thousandth of p-oxy-aminophenylarsinoxide do not stain brown at all, and therefore develop no more traceable reducing capacities, while salvarsan, when administered *in vivo,* is much more diluted and the spirochetes nevertheless show a certain reducing power, it follows that the oxide mentioned cannot be looked upon as the primary alteration product of salvarsan in vivo. As the spirochetes still possess a comparatively high reducing power after their treatment with salvarsan *in vivo,* only a powerful reducing agent can be considered as the primary alteration product of salvarsan *in vivo.* Since we have eliminated the above arsin acid and the oxide, there remain for consideration only salvarsan as such and the salvarsan base as the effective substance which is "anchored" to the spirochetes.

Clinical observations also speak against the primary development of p-oxy-m-aminophenylarsinoxide as the effective alteration product of salvarsan and particularly the fact that the oxide mentioned is considerably more toxic than salvarsan. If all salvarsan, previously to its "anchoring" to the spirochetes, were altered into the arsinoxide mentioned, the proportion of the *dosis curativa* to the *dosis tox-*

ica would have to be the same. This is not the case. That is why, in my paper on stovarsol, I emphasized how improbable it was that the p-oxy-m-aminophenylarsinoxide could be the only effective alteration product of salvarsan. Salvarsan is less toxic than the oxide mentioned, because, when changed *in vivo,* as I shall point out later, the *water insoluble* salvarsan base is formed. The latter reacts with the vital constituents of the parasites and is selectively bound by these, whereas it cannot react with the vital constituents of the body cells, i. e., the nucleic acid containing nuclei. This can be demonstrated by subjecting living yeast cells, which abound in nucleoproteins, to intact salvarsan. On the other hand, the water soluble p-oxy-m-aminophenylarsinoxide is bound much more feebly by the spirochetes though still powerfully enough to be sufficiently effective. At the same time, being readily soluble in water (in addition to its basic nature) it reacts chemically with the acid cell nuclei, which fact readily explains its higher organotoxicity.

Hence, of the possible effective alteration products of salvarsan *in vivo,* only salvarsan itself or its base remain to be considered. Salvarsan as such (the dichlorhydrate) can be excluded immediately, as the experiments with living cells and intact salvarsan have shown that a binding of the latter by living cells is out of the question.

By exclusion, we therefore conclude that the salvarsan base alone can be considered the primary effective alteration product of salvarsan *in vivo,* as the powerful reducing capacity which the spirochetes still possess after salvarsan treatment *in vivo* points exclusively to a product with a powerful reducing capacity. Additional factors in favor of the alteration of salvarsan into its base are the fact that spirochetes can only bind selectively, practically water insoluble substances; furthermore, there is the comparatively low toxicity as compared with the p-oxy-m-aminophenylarsinoxide, reasons for which were given above.

How does the precipitation of the salvarsan base take place within the system following an intravenous injection of its dichlorhydrate (salvarsan)? One could say, briefly, that this precipitation is caused by the "atmospherilia" of the blood if one were to use this term. The oxygen and carbon dioxide content of the blood must have the same effect, as was shown above, with regard to the oxidation of salvarsan by air. The precipitation of the salvarsan base (which, by the way, must take place in a very effective colloidal form, under the given conditions) depends on the presence of certain ions. As experiments *in vitro* have shown that one can precipitate the salvarsan base out of its dichlorhydrate with calcium chloride, it would be particularly advantageous therapeutically, to keep the system saturated with calcium. Under these conditions the precipitation of the salvarsan base must take place more rapidly than in normal blood, the clinical effect must be quicker than under normal conditions and the toxicity must necessarily be reduced, as the total amount of salvarsan is directly changed into its base. This has in fact already been found empirically by clinicians. The reports of Wiesenack, Jacobsohn and Sklarz at the Clinic of Buschke deserve mention in this connection. Ziemann, also, in his discussion of my paper at the Berlin Microbiological Society (December 15, 1924) pointed out that large doses of neosalvarsan are tolerated if calcium is administered simultaneously. One should, therefore, inject salvarsan only when the body is saturated with calcium, or a calcium salt should be injected previously to the salvarsan, in order to reduce the toxicity of salvarsan on the body cell.

Within the limited space available we can only briefly outline the clinical questions involved and must reserve further details for future publications.

The reason why tabes and progressive paralysis benefit so little from salvarsan medication is explained in the following manner: We know that normally, practically no salvarsan reaches the brain, as it is prevented from doing so by the normal protective apparatus of the system. This protection is provided by the *vascular endothelia* and the histocytes as well as by those organs which abound in lipoproteids, such as the liver and spleen. The latter, owing to the lipoproteid content of their protoplasm, bind a large part of the salvarsan similarly to the parasites, for which reason salvarsan soon disappears from the circulation and has no time to penetrate the vascular endothelia. However, if this protective apparatus is diseased or if we inject larger doses of salvarsan than the elements of the developing base mentioned are capable of binding, some salvarsan will reach the brain with the well known deleterious results. The lipoproteids of the brain are naturally just as capable of binding the salvarsan base *selectively* as the parasites, provided pathologic conditions give them a chance. This is proved by the mere fact that salvarsan is more than one hundred times as toxic by intraspinal injection, if it is allowed to react with the lipoproteids of the cord and brain. These organs are known to consist chiefly of lipoids and lipoproteids. It is therefore utterly impossible to influence the spirochetes located in the brain or cord for purely chemical reasons which must be accepted as given facts, as every molecule of the salvarsan base is immediately bound by the lipoproteids of these organs before it has any chance of reaching the colonies of spirochetes usually located at a certain depth. Hence the pronounced toxicity of intraspinal injections and the small therapeutic benefit derived therefrom. The spirochetes are protected in the brain and the cord against the attack of lipoproteid solvents similarly to the manner in which the lipoid containing nucleus of the spores of microorganisms is protected by the lipoproteid containing spore membrane.

In the first instance the disinfectants are bound by the lipoids and lipoproteids of the organs in question and can therefore no longer reach the parasites; in the second case the lipoproteid of the spore membrane forms a barrier with the desinfectant, beyond which it is difficult for the latter to penetrate. Chemically this barrier would consist of a salt of the particular lipoid acid and the corresponding base of the disinfectant employed. There can be little doubt, of course, that spirochetes *in* the spinal fluid and those located in the superficial layers of the cord and brain are devitalized in these cases. However, those parasites which are located within the organs do not succumb to the spirillicide action. Therapeutically one must, therefore, attempt to influence these indirectly via the body cells by a catalytic hastening of the oxi-

dation processes *in vivo*, which coincides with a rapid increase of the antibody production. Insoluble mercuric salts are generally used for this purpose on account of their prolonged and lasting action in the above sense. In my opinion one should, however, not attempt to achieve this sterilization by inoculating another disease (i. e., malaria) into an already syphilitic patient. The aim should rather be along the lines of modern chemotherapy, to determine what chemical products are formed by the system when a syphilitic infection takes place and why an increase of their production seems to occur in the presence of malaria plasmodia?

This question is important for future microchemical investigations.

We already have certain clues as to how the system responds in these cases. However malaria treatment cannot yet be advised for more than the treatment of progressive paralysis before more light has been brought into these relations. The method of choice must still be to influence the parasites indirectly, as energetically as possible, by combining metal salt treatment (as the most effective indirect antisyphilitic) with lipoid therapy. Strictly speaking, empirical investigators have already chosen this method of treatment by infecting their patients with malaria plasmodia and recurrens spirochetes, both of which contain a high percentage of lipoproteid. From the aforesaid one can also conclude that Ehrlich, by creating his old salvarsan, had already found the best antisyphilitic. Neosalvarsan, being more readily soluble in water, is considerably less effective therapeutically. Our experiments on living yeast cells show that roughly ten times the dose of neosalvarsan (as compared with old salvarsan) is required in order to guarantee the same intense therapeutic effect. This has in fact been repeatedly emphasized. Only recently Arning emphasized the superiority of old salvarsan over all other salvarsan compounds. We now know the reasons for this optimum clinical reaction. As already stated, the reasons are the extreme lipoid solubility of the salvarsan base compared with the much poorer solubility of the neosalvarsan base in these media. All the other "improvements" of salvarsan cannot be acknowledged as such, at least from our own investigations. I have not had time to test the preparation of Albert. One must add here that Ehrlich and the manufacturers of neosalvarsan had already found that the latter is less effective therapeutically than old salvarsan, though they did not know the reason therefor.

One important clinical observation may be mentioned here. Experience has shown conclusively that an abortive cure is possible only up to a certain time limit. Beyond this limit the cure practically always fails, as Kolle has shown by animal experiments. This time limit, in my opinion, coincides with the moment at which the spirochetes invade the brain, where they cannot be destroyed no matter how large a dose of salvarsan is administered. This is the reason why Buschke and Kroo apparently succeeded in sterilizing their recurrens mice with salvarsan. However, when they inoculated some of the brain substance of these "sterilized" mice into other animals, all of the latter were infected, the reason being that the recurrens parasites, which chiefly consist of a lipoid albumin compound, *cannot* be devitalized in the brain (which also abounds in lipoproteids) either by salvarsan, as such, or by its alteration product the salvarsan base, any more than can the Spirochæta pallida.

If these experiments had been made with a knowledge of the chemical structure of the spirochetes and the alteration of salvarsan in the system, the results could have been predicted. This, in fact, distinguishes exact microchemical research from the customary empirical method of investigation, as the latter cannot *predict* anything and usually has to sacrifice host of animals before any question can be decided.

We conclude from the foregoing that intensive treatment with medium large doses of old salvarsan is the method of choice, on the basis of microchemical investigation. Powerful blows and not pin pricks are advisable, as I already pointed out years ago. To secure a lasting effect it is also advisable to go back to intramuscular injections. Painful infiltrations can be avoided as I expect to communicate later.

In cases of fresh syphilitic infection, our investigations show that a course of salvarsan treatment should precede mercuric treatment, in order to devitalize, with the salvarsan base, all the parasites possible within reach directly with one blow. If this has been achieved, or if, in an advanced stage of the infection this treatment does not promise the destruction of all parasites, one must aim at an indirect destruction *via the body cell*, by catalytically increasing the production of antibodies, as explained above. Mercury must still be considered the agent of choice for these purposes even if a certain benefit must be conceded to bismuth in this respect.

The reason why salvarsan is more easily tolerated after a preceding mercurial injection is the fact that the latter is followed by a certain leucocytosis as a result of the defensive reaction of the body against mercury ions, with the result that only a *small part* of the salvarsan in a subsequent salvarsan injection can exert its action, as the lipoproteids of the leucocytes which then constitute quite a considerable factor, bind a large amount of the developing salvarsan base chemically, thereby inhibiting to an extent its action on cells and parasites.

CONCLUSION AND SUMMARY

What must be the chemical structure of an effective chemotherapeutic antisyphilitic agent? We know that we can now influence syphilis therapeutically in two ways: a, by attempting to damage the parasites *indirectly* via the body cells, or b, by attacking them *directly* with a spirillicide agent, that is with a genuine chemotherapeutic agent in the strict sense of the word. In the first case we choose metallic salts which are now known to act catalytically by hastening the oxidation processes *in vivo*, thereby hastening the cell activity and subsequently the production of antibodies. In the second case we try to destroy the parasites, possibly with one blow, though this has not always been found possible in practice. Salvarsan is chiefly used for the latter purpose. If we consider its mode of action as explained above, we are now in a position to determine *definitely* how an antisyphilic chemotherapeutic agent should be built up. Such an agent must, as far as we can judge at the present time, meet at least the following demands:

1. The agent must be able to react chemically with the living spirochete; if not, its alteration product *in vivo*, at least, must be capable of doing so.

2. The agent must possess oxygen abstracting properties, that is it must be capable of exerting an inhibitive influence on oxidative syntheses, so that the natural differences between the chemical structure of the body and spirochete cells are taken advantage of therapeutically. The agent must consequently exert the very opposite effect of metal salts, which act indirectly.

3. Inasmuch as its action depends on an abstraction of oxygen, the agent should preferably possess pronounced reducing capacities which would increase the above mentioned action. As experience has shown that the abstraction of oxygen, which is effected by the arseno group during its oxidation, is in itself sufficient to effect a devitalization of the spirochetes, the powerful reducing properties of an arsenical are not a *conditio sine qua non.*

4. The agent should possibly be a substance of a pronounced basic nature and should therefore not contain more or less powerful acid groups (no carboxyl, sulphurated or arsanilated groups) as experience has proved that these preparations develop a weaker affinity for the spirochetes than the former. This is the reason why Ehrlich found arsenicals with trivalences to be more effective than those with pentavalences.

5. The agent or its alteration product *in vivo* must be more markedly lipoid soluble than water soluble in order to be bound selectively by the spirochetes. This reduced water solubility diminishes the organotoxicity of the preparation. In addition, the selective binding of the compound by the spirochetes, directs the toxic action of the preparation almost exclusively against the parasites. This alone can furnish the desirable margin between the curative dose and the toxic dose, thus guaranteeing a favorable therapeutic index.

6. The agent, as such, or rather its alteration products *in vivo,* must possess a strong chemical affinity for the parasites and *none* for the body cells. Every agent which acts *directly* on the pallida, that is every chemotherapeutic agent in the strict sense, even if future findings should base its action on a different principle than that of oxygen abstraction, must meet demand (5), as an optimum therapeutic index is not imaginable otherwise, for the five reasons given. If we consider the properties of salvarsan one can see that Ehrlich has built it up most ingeniously. It meets all the demands of a chemotherapeutic agent against lues, with the exception of demand 6.

No preparation can meet this demand as these conditions represent given factors which are inherent in the chemical structure of the body and parasite cell with which we simply have to put up. Nor should we yield to illusions and expect preparations other than salvarsan to be capable of definitely destroying the parasites *with one blow* in the advanced stage of the infection. The above, therefore, represent the minimum requisites for a modern chemotherapeutic antisyphilitic agent.

One can also judge from the aforesaid why I was able to predict one and a half years ago that bismuth could not be considered a chemotherapeutic agent in the stricter sense. None of the bismuth compounds which have been employed so far, with the exception perhaps of the very latest triphenylbismuth of Giemsa, meets the above demands. Nor has it yet been decided whether the action of the Giemsa preparation is due to bismuth or possibly to the *total molecule.* This might be possible as bismuth is very firmly bound chemically in Giemsa's compound and can therefore be only feebly active itself.

I might add here that my criticism of earlier days has in the meantime been confirmed by the animal experiments of Kolle who discovered everything we had predicted of bismuth, with our histochemical knowledge (11), as one can gather from one of Kolle's recent publications (12). If one considers furthermore the expenses involved in the experimental test of one single bismuth compound only, of which I happen to know, and then considers that 2,400 bismuth compounds were tested in France, as Kolle mentioned in his Frankfurt paper, one can obtain an idea of the enormous sums frequently wasted on empirical experiments in similar cases.

From the foregoing it follows that all arsenicals with pentavalences, provided they meet the demands mentioned above, must be serviceable antisyphilitic agents. We may also expect a certain spirillicide action from antimony compounds with low valences for the same reasons which apply to arsenic. Practical experiments have already proved this. Other substances with a similar chemotherapeutic action on spirochetes, to mention a few examples only, may be expected among the quinines and the dyes, provided they have been previously altered in such a way as to meet the demands chemically. Logically animal experiments alone can determine their definite value.

One must not forget to emphasize the fact that hitherto we have only found *two* differences between the spirochete and body cell which can be exploited therapeutically: the (varying) content of oxygen and the absence of nucleic acid in the pallida, to which we now add the third difference, the lipoid content.

If we succeed in penetrating deeper into these microchemical relations and should discover more differences in the chemical structures, it is not improbable that other substances of therapeutic value might be found which owe their properties to *other differences* in the chemical structures of the two cell species and would in accordance have to meet other demands than those enumerated above.

These ideas may also serve as a guide in the chemotherapeutic attack against other infectious diseases.

The microchemical investigations on the differences between the chemical structure of the body cell, on the one hand, and the parasite to be combated one the other, should if possible be completed *before* any animal experiments are made.

Microchemistry and chemotherapy should cooperate. *Corpora non agunt, nisi fixata.* The investigations discussed above again prove the truth of this old slogan of Ehrlich.

Our present knowledge of the fact that we are by no means limited to water soluble substances chemotherapeutically, while pronounced lipoid soluble substances are selectively bound by the spirochetes and many other microorganisms, will probably be of no little importance in the future development of chemotherapy.

The author's references will appear in his reprints.

Instruments, Apparatus, and Clinical Notes

The Treatment of Dorsal Spinal Caries

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The difficulty of treating tuberculous caries of the dorsal vertebræ is only too well known. Not only is collapse early and acute, abscesses common and large, but even a small, final angulation tends to throw the whole vertebral column out of truth, and result in serious secondary changes in the thorax, and lumbar spine. It is in the dorsal region, too, that most difficulty is met with in preserving immobility during treatment, and in establishing the compensatory curves necessitated by collapse and ankylosis of the vertebræ.

Apart from operation, treatment by relative immobilization has been practised by many forms of apparatus—some, now happily obsolete—varying from the comparative fixity of a plaster jacket, to the freedom and ease of suspension from a Fisher, or other, frame. It is difficult to obtain local heliotherapy in most types of apparatus which result in flattening of the thorax and wasting of muscles, and the most ardent advocate of external fixation must admit that no apparatus will maintain even relative mobility without injurious pressure. It is notoriously difficult to keep a child quiet once the pain has gone, and the usual strait waistcoat apparatus interferes with sun treatment. Certainly, the body may be exposed in sections, as in the plaster bed and front case method, but this involves movement of the whole body.

So, this rough scheme of treatment of a typical case is offered in a tentative spirit, in the hope that it may interest those who treat these cases, and provoke a helpful criticism.

When admitted, in the acute stage, the child is treated on his face, propped up by pillows under the shoulders (Fig. 1). Reins are worn, consisting of two soft rings fastened over the back, and held in front by a strap which passes around the bed. This latter is of the simplest possible description, cheap, mobile, and with a laced canvas top. They are made in the hospital workshops. The child is maintained in a position of hyperextension, with the hips extended, and the knees flexed over a pillow, which also protects the toes from pressure. The ankles are tied loosely to the foot of the bed, and the rings to the top. Nursing is simple, a pillow being slid out from under the pelvis when necessary. Bed clothes are easily applied, but normally the patient remains stripped as soon as full pigmentation is obtained. The method we use is to expose the whole body to the sun for two minutes the first time, doubling the dose day by day, and checking the dose by the skin reaction. In dull weather, exposure to skyshine is allowed for half an hour for the first dose.

Treated in this manner, the child's pain and tenderness are at once relieved, the angular curve flattens to a marked degree, and muscle spasm becomes less. Treated on the back, as by the more common methods, the thoracic viscera press on the diseased area, and local heliotherapy is impossible. Treated on the face, the vertebral column is relieved from weight, the spinal muscles improve in tone instead of becoming atrophied, and so far as we can tell, the local focus of disease improves much more rapidly.

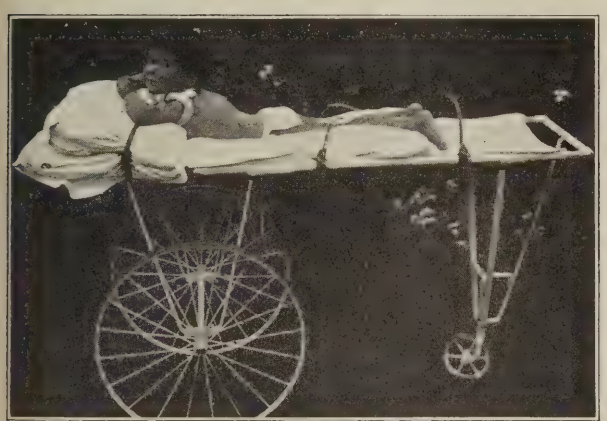

Fig. 1.—Showing child lying on his face, propped up with pillows under the shoulders.

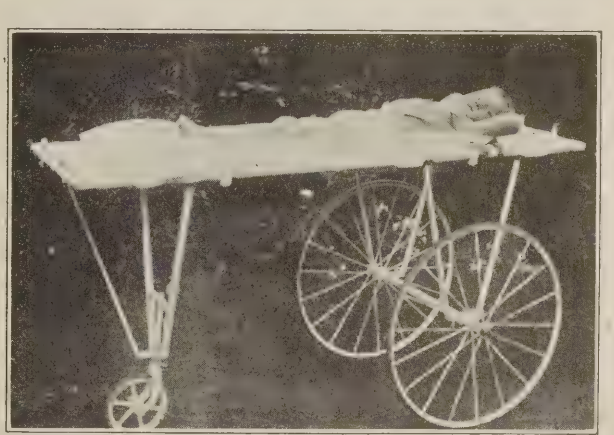

Fig. 2.—Showing child some weeks later, turned on his back. The condition is good and pain absent.

After some weeks, when the general condition is good, pain completely absent, and muscle spasm only local, the child is turned on his back (Fig. 2). A short plaster bed is made, in moderate hyperextension, and fitted snugly down to the canvas of the frame by a few small sandbags. The same position of the spine and lower limbs is maintained, and reins are worn. It is at this time that relative immobility of the spine is so important, and so hard to obtain. Malleable iron prongs are fitted to the frame so that one passes over each shoulder, one over each side of the pelvis, and one over each thigh. These prongs are so tempered as to be easily bent by the surgeon's

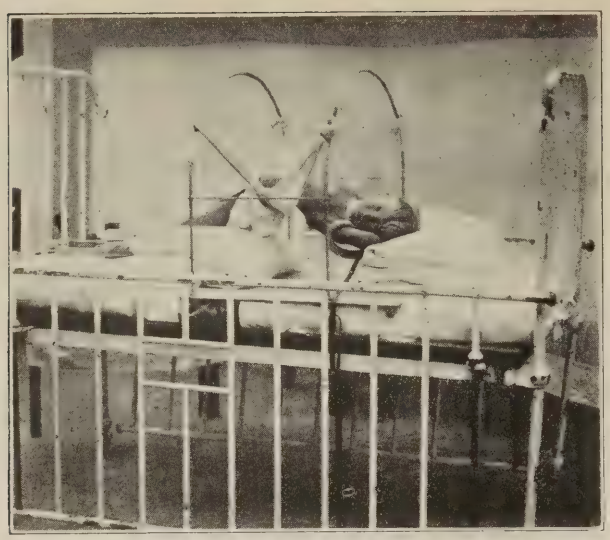

Fig. 3.—Showing the child slung from cradle by bands crossing diagonally, a pad fitted to the kyphus.

hands, but so tough as to resist the strength of a child. They are pressed down until they nearly touch the skin, and are clamped to the frame. The consequence is, that if the patient moves, the prongs dig into his skin, and he learns within the first day that in immobility alone lies comfort. By invoking the patient's cooperation in this manner relative immobility is assured, and yet the apparatus does not interfere with sun treatment. At this time he is allowed to move his legs to a limited extent.

When all pain, tenderness and muscle spasm have been absent for three months, and the x ray appearances of the spine are encouraging, the child is once more turned on to his face, in the hyperextended position. He is fastened merely by reins at the shoulders, and can move about on his bed to his heart's content. It is now that heliotherapy is of the greatest importance, to aid in building up the spinal muscles, and indeed, in most cases, a very satisfactory muscular development may be obtained. He is kept for a further three months or so in this position, and meanwhile a spinal support is made for him, fitted in suspension. When at last he commences to get up, massage to the legs is commenced, and wedges fitted to the inner side of the boots, to correct the almost inevitable relaxation knock knee.

In those cases where an ugly and damaging kyphosis has persisted, compensation is obtained in this wise. The child is slung from a heavy cradle, by bands crossing diagonally under a pad fitted to the kyphus. These are arranged in such a manner that there is a pull downwards from each end of the curve, as well as a push upward at the curve itself (Fig. 3). In other words, the patient's own weight is used to obtain a mechanical effect somewhat similar to the Marconi apparatus, but in a more simple and inexpensive manner. A few weeks on this cradle produces considerable compensatory curves. Naturally, discrimination must be exercised, and only cases absolutely quiescent, and having a collapse of not more than two vertebræ, are considered suitable.

Fig. 4.—Same patient as in Figs. 1, 2 and 3, showing results of treatment.

Abscesses are treated by antagonizing the force of gravity, and are not aspirated when acute unless involving the skin. For instance, if a psoas abscess presents, the foot of the bed is raised on blocks, and usually, these abscesses disappear, to be no more seen except in radiographs. It would seem that the sudden relief of pressure obtained by aspirating an acute abscess only leads to further exudation into its cavity, and so, working on this hypothesis, abscesses are only aspirated when the wall is thickening, and consolidation commencing. Of course, if one approaches the skin, it is a different matter, owing to the risk of secondary infection.

By this scheme of treatment we hope to obtain a cure with a straight back (and strong muscles to keep it straight), and only a small kyphus with one projecting vertebra. Since the natural cure appears to be by collapse of one or more bodies, prevention of any collapse at all would appear to be a dangerous matter—as indeed, some have found. The results obtained so far by these methods are at least encouraging (Fig. 4).

Observations on the Osgood-Sclatter Disease.—Robert Ollerenshaw (*British Medical Journal*, November 21, 1925) thinks that this lesion is a fracture and should be treated as such by complete immobilization for six weeks. He finds that the best immobilization is achieved by a well fitting plaster cast, fitted close to the limb and moulded closely round the knee. It reaches from the groin to the ankle and, while it is worn, walking is permitted. After the removal of the cast massage is instituted and a knee cage, with a stop allowing only forty-five degrees flexion, is worn for a further six weeks. The cases which the author has seen where symptoms have persisted for months or years, and which have been called "apophysitis," "periostitis" either traumatic or mildly infective, or the like, have in every instance been the cases which have not been treated by immobilization, but where continued strain has been allowed to take place. Most of these cases which one sees later in the course of the disease settle down well and consolidate if completely immobilized in the same manner as is advised for the recent cases, but a few cases of long standing where a tender nonunion exists are improved by operative fixation of the fragment to the diaphysis. In more than half of the author's series of cases girls were affected, though it is generally stated that the condition is more frequent in boys.

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Alteration of Character, Disposition, and Behavior, as a Sequela of Encephalitis Lethargica

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Objective neurological manifestations of an organic character as a consequence of an attack of encephalitis lethargica have been exhaustively studied and elaborately reported. Mental phenomena have also been observed but in a smaller number of cases. In the latter the psychic alterations are usually without definite intellectual disturbances. The impression, however, may be gained, especially in the Parkinsonian types, that there is a postencephalitic depressive psychosis, but in reality the mental condition is an akinetic expression in the psychic activities analogous to the akinesia in the motor sphere. In all such cases the mental processes run parallel to the motor phenomena, including the speech which is characteristically slow. In some cases the depression may become very deep and the patients show no tendency to analyze, criticize or investigate events and occurrences in their environment. Such cases may then simulate a demented state; in reality there is no genuine dementia but only a generalized akinesia involving the entire psychomotor sphere. Contrary to depressive states encephalitis lethargica may be followed by states of euphoria but this is a rare occurrence; very few such cases are on record.

Besides the purely psychotic phenomena analogous to those observed in the classical types of psychoses there is another set of manifestations which are more frequently observed, especially in young persons and children, which constitute a more difficult problem for solution and therapeutic management, and which comparatively speaking have been neglected. I have reference to alterations of disposition, character, emotivity, and behavior. The following group of cases came under my observation within the last two years:

Case I.—L. S. T., a boy aged thirteen years, had encephalitis lethargica about four years ago. The objective symptoms were typical and very pronounced. Bulbar disturbances were in evidence. Difficulty in swallowing and hoarseness were very disturbing to the patient. He had been confined to bed eight months because of an unusual state of asthenia. The convalescence was slow. It was only eighteen months after the onset of the disease that he commenced to show rapid improvement. He was able to be about, grew strong, and had a voracious appetite.

At that time he commenced to show peculiarities in behavior. He returned to school but was unmanageable, while before his illness he was quite obedient and attentive. He was very irritating to the teacher and pupils. He became mischievous, would annoy the boys of the class by pulling their clothes, cutting their hair with scissors, and spotting them with ink. When reprimanded by the teachers he would become violently angry, use profane language, spit at everybody around him, use physical force, throw books and any object which was handy, break windows. He was not amenable to reason and no one, including his parents, could pacify him before the spell of anger was over. Then he appeared sad, depressed and full of regret. He could not be kept in school, the teachers being unable to control the situation.

At home he mistreated his two small sisters, particularly the baby sister, whom he would frequently spill out of the crib, finding a special delight in doing it. However, he promptly expressed regrets for having done it. Frequently he would strike his mother when she contradicted him. When in his presence she complained to me of his behavior, he screamed at the top of his voice, pounded on the floor, and called her unprintable names. On the other hand, when she would happen to be indisposed, even very slightly, he would give her all his attention, sit by her bed for hours, be alert for anything she would ask of him, and frequently shed tears when she mentioned the word pain.

On several occasions he promised to behave better and be obedient if he would be permitted to return to school, but no sooner would he be admitted than the teacher would be compelled to send him home because of the disturbances he created in school. He would frequently lie and invent occurrences which never took place. He stole money and not rarely trifling objects such as toothpicks, nails, etc. When reprimanded, he always expressed deep regret with constant promises not to repeat the acts, but all in vain; he invariably returned to his misbehavior.

Intellectually he was alert; his memory was excel-

lent; in spite of his being absent from school for many months, he was able to recall all he ever learned. He was very quick in mathematical problems, and frequently exhibited good judgment in matters of a serious character. The management of the case was exceedingly difficult, as on one hand the parents were not intelligent enough to understand the situation fully, the father punishing him with violence. On the other hand the school authorities insisted on considering him mentally deficient and placing him in a special school for feebleminded children. The patient rebelled against this. When put among the defective boys he violently protested, giving everybody more trouble than in the regular school. With tears in his eyes he implored me to intercede for him, stating that he should be given another chance, but again all in vain, as he promptly returned to his mischievous behavior.

Such was the patient's condition for twenty months without the least change in his disposition and behavior. Somatically he presented, as sequelæ of encephalitis, internal strabismus and frequent attacks of dyspnea. Soon, however, he commenced to show signs of improvement. Gradually the outbursts of anger became rarer and rarer; the remarks or advice of his parents were more frequently listened to by him. Sleep was more profound than heretofore, the restlessness became less. However, it was noticed that frequently and without provocation tears appeared in his eyes. He became very emotional. If any one of his brothers or sisters happened to be injured, he would run promptly to their rescue, and exhibit a caressing and highly solicitous attitude towards them. He began to show a great interest in study. Serious subjects attracted him now much more than at any time prior to his illness. He would go to the library where he would spend hours in reading books on history. He refused to play with other boys, but would go out with some of the boys for walks. He commenced to speak of future plans, had a desire to resume school studies and to graduate for the purpose of obtaining a college education. He became very attentive to his personal appearance. He treated everyone with proper consideration.

Physically he was in excellent condition. The attacks of dyspnea, however, continued. He asked for relief as they were very distressing. He finally returned to school and began to make rapid progress and made up unusually well for the lost time.

At the present writing the boy is well and normal with the exception of the dyspnea which, however, occurs only on rare occasions. The family history of the boy was free from any mental or nervous disorders or any constitutional disease.

CASE II.—L. S., a girl of fifteen, was in good health up to 1920; she was of good disposition and possessed normal intellectual faculties. At that time she had an attack of encephalitis lethargica, with all the typical symptoms—somnolence, diplopia, ptosis, and fever. The course of the disease was very long and only at the end of the sixth month all the physical symptoms disappeared, when another group of phenomena made their appearance. First of all, she complained of vertigo and attacks of excessive perspiration and there were also evident mild choreiform movements on the right side. In the next place, she began to be very talkative and erotic; she would smile at every man whom she happened to meet and she was frequently found at the window of her room without clothes. She became careless and very euphoric. She was obstinate, mischievous, always in trouble with her people, misbehaving on the street, making remarks about everyone who happened to walk in front of her. She quarrelled with her brothers and parents and was very impertinent. At times she was found in a dreamy state, would not answer when spoken to. She became careless about her personal appearance and unclean. She lost interest in her relatives and became indifferent to them. When reproached for it she would only smile, promise to do better but her sentiments remained the same. She manifested a tendency to misrepresent, to lie about things that actually never occurred. On one occasion she said she found a pocketbook full of money but when asked to show it she answered that she distributed the money among poor people. She also told her mother that a wealthy man proposed to marry her, provided she left her parents at once.

Her general appearance was good, the intellect was lucid, at no time were there hallucinations or any other sign of delusive reasoning. Her family history showed abnormal features. The grandfather was alcoholic, one aunt was in an insane asylum, one first cousin was a mental defective. The patient had in childhood convulsive seizures from the age of two to six and had a meningeal attack of unknown character at ten for which she was confined to bed for eleven months and during which she was at different periods delirious.

CASE III.—M. D., a boy of seventeen, was in excellent physical and mental condition up to the age of fifteen. He was then stricken with an attack of encephalitis lethargica for which he was bedridden during a period of three months. He made a complete physical recovery, but his behavior and character underwent a radical change. As fond as he was of school work prior to his illness, he now decided for himself not to return to school, lost all desire for intellectual work and found a commercial position. He soon left for another position. He did this several times. He was unable to remain in one place for longer than one or two weeks. This restlessness and instability were evident in his general conduct and relationship to others, including his own family. He became lazy, nonchalant, disinterested in everything and everybody. He had violent outbreaks of anger, would attack and assault anyone who happened to contradict him. Lying was an outstanding feature; intentionally and without any provocation he would speak ill about his friends and his own parents; he accused the latter of depriving him of the most necessary things, such as food and clothing. He masturbated violently and became indecent in his conversations with females or males. His criticism reached such a degree that once he was arrested for making a profane proposal to a married woman on the street. He suffered from insomnia and became exhausted upon the least exertion. He had frontal headache. A test for intellectual ability gave excellent results. His memory was good. He was able to discuss intelligently almost any topic of the day, but in doing so there was a strong tendency to bring forward his own personality as the last word of logic and reason. Vanity was predominant: he spoke of many plans and

projects that he expected to bring to realization. A somatic examination brought out markedly increased kneejerks with a bilateral toe phenomenon.

He is still under observation and there is not the slightest tendency to a favorable change in the disposition, behavior or in the emotional sphere. The family history revealed two cases of idiopathic epilepsy and one case of dementia precox, all in cousins. The mother is hypochondriacal. The patient had several attacks of acute chorea in his early childhood.

Case IV.—G. R., a boy of ten, had an attack of encephalitis lethargica at the age of seven which lasted four months. As a physical sequela there were myoclonic movements of the muscles of the neck, which are still present in a mild degree. The recovery from the encephalitis was followed by a total transformation of the child's disposition and behavior. While formerly he was considered as possessing an intelligence above the average, now he had great difficulty in remembering even the most recent events. To comprehend the simplest problems of arithmetic he was compelled to spend considerable time in figuring. When spoken to he frowns and tries visibly to understand the words, but the expression of his face shows that the patient is under great mental strain and effort during the entire conversation.

Prior to his illness he was very active and was considered a leader by his schoolmates; now he is totally lacking in initiative; whatever he does, is done by him automatically. He becomes easily aroused and irritated while formerly he was mild and gentle. At times he is impulsive and throws objects at anyone who happens to contradict him. He is very vindictive. Another peculiarity observed in the boy is that he seeks the company of much younger children, while formerly he enjoyed being among older boys.

His condition has remained unaltered for the last sixteen months. His general health is good. The family history shows a neuropathic taint in many members. The father is alcoholic and was before he married. One uncle was confined to an institution for the insane for two and a half years.

Case V.—G. S., a girl of sixteen years, while in perfect health suddenly manifested encephalitis lethargica. Recovery followed in three months. A slight paresis of the left internal rectus muscle remained. Prior to this illness she was of excellent intelligence, had a splendid record in school, was of a loving disposition and particularly fond of her mother. Following the encephalitis a radical change took place in her. While intelligence remained intact, she was unusually irritable especially when her mother would address her. She was restless and impatient, could not sleep, had outbursts of excitement in which she became very aggressive and at times brutal in language and action. She became very domineering towards her sisters and friends; her wishes had to be carried out promptly as otherwise offending remarks and at times actual attempts to attack on her part would follow. Her affection for her relatives had considerably decreased. Formerly, when her baby sister would awaken at night and cry, the patient was the only one in the house who would give her attention for hours. At present she is totally indifferent to anything that may happen, she pays no attention to crying or to pain affecting anyone in the household.

Prior to her illness she was sexually indifferent from an objective viewpoint. Now she exhibits considerable eroticism in the presence of men. She masturbates frequently. Somatically there is nothing to mention except increased tendon reflexes and a slight paresis of the left external rectus muscle. The intellect is intact and above the average. The family history is unfavorable to the patient; the father is exceedingly emotional, the mother is neuropathic, having frequent periods of obsessions, also of depression. One brother also had several attacks of mental depression.[1]

A review of the histories of the cases just reported brings out the following essential characteristics of postencephalitic sequelæ in the domain of the emotional sphere. Aggressiveness, hostility, impulsiveness, outbursts of excitement or anger easily provoked or occurring without the least external stimulation, restlessness, discontentment and dissatisfaction; a tendency to misrepresent or frankly to lie without any specific motive; a tendency to misappropriate or to steal; excessive eroticism accompanied or not by selfabuse.

What characterizes particularly this group of symptoms which could be conveniently called "psychomotor instability," is that they did not occur periodically or at more or less regular intervals similar to those observed in cases of maniacal or hypomaniacal states, but they presented continuous states without intervallary periods analogous to the purely motor manifestations of lethargic encephalitis in which the symptoms exist for a long time without modifications. The group of symptoms outlined above, therefore, cannot be considered parallel to the clinical pictures observed in the classical psychoses. While individually they may be encountered in several types of psychoses, nevertheless collectively they cannot be identified with the latter. They constitute a clinical entity apart because they involve almost exclusively the domain of emotional forces, but not of the intellectual forces. The latter were invariably intact in everyone of my cases as well as in similar cases reported in the literature. Indeed, a careful mental examination failed to reveal any disturbance whatsoever in the domain of association of ideas or in judgment. Consequently in all such cases we witness a distinct *dissociation* between the psychomotor instability which was so strikingly present in each of the cases described above and the integrity of the intellect strictly speaking. Everyone of the the individual characteristics enumerated above is not the expression of a profound mental disorder encountered in typical psychoses. For example, stealing and lying or committing fraud are but the external manifestations of a morbid impulse of which the patients are fully conscious and which they regret after the commission of the impulsive act.

Affectivity may at first glance appear to be seriously involved, as we have seen in the majority of the cases, so that to give one the impression of a true psychosis in its early development, such as dementia precox, but in reality this is not the case. Disturbance of the affect may also be encountered in mental defectives or as an isolated symptom in psychoneurotics, but in all such cases the patients are not fully or

[1]This study included two more cases, which have been omitted for lack of space. They will be included in the author's reprints.

not at all aware of the true significance of the disorders; they are not in the least moved or otherwise even touched when their damaging conduct causes considerable annoyance or actual physical inconvenience to those who are interested in them.

In the postencephalitic cases, on the contrary, the patients are very sensitive to the consequences of their deviations from the proper conduct and in some cases we witness genuine regret with a state of anxiety and a painful criticism of their behavior which is after all not voluntary, is not thought out, or deliberate. Besides, these morbid acts, which are the consequence of change of character, are only transient and periodical, they are amenable to amelioration and even to recovery, but they are not the result of a fundamental mental disorder. On the other hand, one must not forget that in spite of this knowledge and criticism of wrong conduct and behavior, in spite of the painful and anxiety state that the latter causes to the patient himself, there is nevertheless existent a morbid emotional state, and the effect is here involved only in its reactions and in the power of execution, but not in its central power.

A similar diagnostic interpretation and meaning we find in another manifestation, namely, in the excessive eroticism which was present in each of the cases of the series. Here as well as in other individual features of the altered character and in behavior following encephalitis, we are dealing merely with an expression of disturbed inhibition and automatism as the result. The intentional forces and the tendencies are intact. From this very same viewpoint the defective or psychotic individuals present a different picture. In them the various tendencies naturally deprived of moral restraint show no indication of the existence of sentimental or altruistic considerations. The execution of these tendencies may be identical with those of the encephalitic cases, but what is at fault is the superior psychic power which is at the basis of the activity in psychotics and defectives. Pursuing further our comparative study, we are led to see in all these behavior characteristics the same lack of regulating or inhibitory influence as in the motor sphere of postencephalitic parkinsonian syndrome in which hypertonicity is such a striking symptom.

If we consider the anatomical substratum of encephalitis lethargica, in which the most important and most constant lesions are found in the mesencephalon, and if we are also mindful of the function of the latter as recent studies lead us to believe, namely, that the purely mechanical action of coordination and reaction is controlled by this portion of the brain, all the psychomotor characteristics under discussion are easily conceived and explained. We must therefore admit that modifications of behavior observed in cases of encephalitis lethargica do not belong to the category of purely psychotic phenomena and that the individuals thus affected are not to be considered as being affected with mental disorders in accordance with the well established classical psychoses. We are dealing here exclusively with emotional phenomena which are only superficially involved.

There is another phase of the subject which deserves special mention, namely, the prognostic outlook of the personality disorder. A study of the seven cases recorded here shows that the individuals whose personal and family histories present evidences of character and behavior disorder, or psychotic phenomena of any nature, had unusually long duration of their postencephalitic disturbances, as at the time of writing this article the psychomotor instability was still present in all its intensity in spite of the fact that three years had already elapsed since its onset. On the other hand, the patients whose antecedents were totally free from disturbances in the psychic sphere, made a complete recovery.

It seems, therefore, that the postencephalitic cases follow the same laws as hereditary influences which we observe in mental abnormalities originating from any source. Emotional disorders, profound or superficial, short or long in duration, associated or not with purely psychic phenomena although they present the same clinical picture in hereditary and nonhereditary cases, nevertheless show a difference in both categories from the viewpoint of prognosis. Their persistence or disappearance depends upon the degree of constitutional fragility.

Another conclusion that can be drawn from the present study is: A postencephalitic mental symptom-group may develop in individuals heretofore perfectly normal and totally free from any predisposing factor. An infectious condition, such as lethargic encephalitis, may disturb the psychomotor tone and the inhibitory system, irrespective of individual tendencies and habits which are being controlled by this system. It stands to reason that should special morbid characteristics be present before the invasion of the encephalitis, they will become more accentuated whether they belong to the intellectual or to the emotional spheres. The presence of a hereditary predisposition is not a *sine qua non* condition for development of a postencephalitic mental symptom-group. Being of a purely emotional character and not of purely psychotic nature the postencephalitic manifestations discussed in the present contribution may tentatively find their physiological explanation in the alteration of the basal ganglia which are invariably involved in encephalitis lethargica and which, we have some reasons to believe, are ordinarily concerned in emotional phenomena. The inevitable inference seems to be that midbrain disorders are associated with behavior disturbances, that the latter are consequently organic in nature, and are a counterpart of the motor disturbances following encephalitis.

Analogous personality changes have been observed in association with some affection of the floor of the third ventricle. M. Meyer (1) calls special attention to MacNeil Donald's case of a man, aged twenty-five, who, following an encephalitis, presented marked character disturbances. He had been formerly upright and in every way reputable; he began to fabricate, became untruthful and morally delinquent, but at no time did he show impairment of intelligence. Examination revealed a typical picture of dystrophia adiposogenitalis.

The accumulated observations point more and more to an organic rather than to a psychogenic conception of postencephalitic behavior phenomena.

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1810 SPRUCE STREET.

A Psychoanalytic Introduction to a Study of the Conduct Disorders of Lethargic Encephalitis*

With Outline of Plan for Psychosocial Reconstruction

L. PIERCE CLARK, M.D.

New York

INTRODUCTION

A survey of the extensive bibliography on the subject of epidemic encephalitis shows that the etiology and treatment of this disease occupy a conspicuous place in the medical literature of the day. Welfare agencies are equally concerned with the social implication of this socalled sleeping sickness as the sequelæ of this disorder often result in conduct difficulties that make it impossible for these subjects to be cared for either at home, by social agencies, reformatories, state hospitals or institutions for the feebleminded. All these systems of care have been tried. It is found that society is dealing with a crippled person who, though neither criminal, insane, nor mentally subnormal is yet unable to adjust to any recognized social code. He is irresponsible and often comes in conflict with the law, but the basis of his disorder is medical, not legal. What is to be done with him? What is the emotional level of his deterioration? Where can an understanding treatment be undertaken, a suitable environment be arranged, and what is the probable prognosis of this disorder? These are some of the perplexing questions that form the basis for the data and suggestions to be presented. Here it is interesting to note that in working out the material submitted, further evidence is found that definite changes in disposition and behavior result when the disease attacks a child's developing brain, whereas an attack in an adult tends perhaps to a more physical expression of the inflammatory process.

The medical aspects of lethargic encephalitis have been developed far in advance of an understanding program for its treatment. I propose therefore: to give a brief outline of the problem; report upon trial and error efforts undertaken by social agencies to fit these dynamically unstable individuals into the rigid and limited provisions of a modern community; discuss the intensive training of a typical case in a young girl whose symptoms were radically improved after a period of ten months psychoanalytic reeducation in an observation home; give a partially analyzed case, with suggestions for future care that might be undertaken with a more profound analytic interpretation of the patients' emotional needs; and finally, propose a plan for organizing an observation home for the intensive study and training of a group of cases.

In 1922 an intensive study of lethargic encephalitis was made in various States. From New York, Boston, New Haven and Chicago it was learned that the epidemic was greater than the community imagined, and the sequelæ developed at a later date were bringing these individuals to the fore. As many as forty to fifty cases were brought to one clinic alone, with absolutely no solution worked out for them, and there were no hospitals or institutions prepared to care for this type. Such patients could be sent to psychopathic hospitals but nothing would be gained thereby. Diagnosis had already been made and what the patients needed was a comprehensive understanding of their particular problem and how best it could be met, and not merely custodial supervision. Throughout New York, Connecticut and Massachusetts a large number of cases were without any type of care.

The social problem met with everywhere may be summarized in the following typical case:

CASE.—An eight year old girl, quiet, well behaved, was making unusually good progress in school until the onset of this disease. One month after her discharge from the hospital she was readmitted with a history of a complete character change. She ran away from home and stayed away for days at a time. The school was unable to keep her on account of her noisy and quarrelsome habits. Neighbors complained about her stealing and destroying and her abuse of other children. Her second period in the hospital was brief, as she was constantly in a highly excitable state. She was sent to a hospital for the insane but was discharged in less than a month as unsuited for the type of care provided. At home she was found to be entirely uncontrollable. Arrangements were then made for a period of treatment in an institution for the feebleminded. The child, with an intelligence quotient of 108, remained here for six months. She was paroled home but her stay was brief, due to a return of the old antisocial characteristics; she was again returned to the state institution, from which the following information was recently received: "This girl is not a mental defective, but she continues to exhibit such bad personality traits and outbursts of violent temper that it seems likely she will have to remain permanently under custodial care."

This case, typical of many others, well illustrates the amount of time and labor spent by welfare agencies in producing unsatisfactory and unilluminating results. In forty cases studied in Connecticut, five patients remain acute social problems, five have died, seven have not been heard from, nine have been reported to have recovered under ordinary care, and the remaining twenty-three have been reabsorbed in the community in spite of varying degrees of physical and mental impairment. After analyzing these results, the conclusion was reached that the problem could be met adequately only through organizing a temporary study home, which would develop care and treatment suitable for children suffering from the sequelæ of this disease. A detailed plan for such a home was submitted at my suggestion to the National Committee of Mental Hygiene.

In a review of the progress made in psychopathology within the past decade we find two distinct lines

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of research. The older one has aided to perfect our comprehension of the transference neuroses, to make more plain their genetic origin and to give us a more secure and lasting therapy. The other line of research is a more venturesome effort to resolve the ego neuroses into their component origins, and even to approximate some means of direct handling of organic disease supposedly based on functional or constitutional defect. In this latter field there are two methods of approach. The first is to recognize that there is an array of functional disturbances present, as in disorders of motility, circulatory disturbances, and the like; and the aim, therefore, has been to devote time primarily to reducing these syndromes to their supposed psychogenic origin for amelioration or cure. For the most part it is an attempt to comprehend neurotic disorders upon a neurologic or biologic basis, which, while not incompatible with well known psychoanalytic views, is closely interwoven with intellectual symbols that make the plan of therapy largely expositive and reeducational (such as my older work on tics). In spite of this rather formal and mechanical method of approach excellent progress has been made by the patients, and it is urged by many that this method of treatment is the "more reasonable" one, and will encounter less immediate resistance although the release of symptoms is less permanent and perhaps the method is only a little removed from the current systems of psychotherapy exclusive and often opposed to real psychoanalysis.

The second method quite as surely recognizes the physical disorders as entities but that very little can be done directly with the symptoms as such. To look upon such sick persons as possessing far graver disorders of character and personality of which the immediate and pressing syndromes are but a part of their real disorder, is the unique position of the latter method. To sidetrack for the time being the whole gamut of symptoms and require the patient to give heed to the long circuitous route by which his predicament has come about, calls for extreme fortitude on the part of both the patient and the physician. It may well be that for some time to come the "more reasonable" psychoanalytic reeducation by the didactic method directed to current symptoms which are immediately pressing for abatement, and then gradually lead the patient back to the graver faults of character from which the symptoms originated, will still be our chief interest and study. To accept functional and constitutional disorders as organic neuroses which are slightly removed or more deeply set into the structural pattern than the now more definitely outlined narcistic neuroses, requires only a little more scientific courage than was shown by Freud and his coworkers a few decades ago when they rescued the transference neuroses from the baleful category of organic disease. Perhaps we shall make more rapid progress in understanding these socalled functional or true neuroses as well as many constitutional diseases (even such diseases as tuberculosis and arteriosclerosis) by a more careful analysis of the egoneuroses and their narcistic fixations. The latter can be, perhaps, best understood only by a more painstaking analysis of the derivations of character in the infantile period, which may be undertaken by a variety of methods as Ferenczi, Rank, Abraham and Jones have shown. Without power of direct memory recall of this infantile period, it is astonishing how Freud (who calls it the pregenital period) has so accurately outlined the difficulties which we may expect to encounter in this twilight zone of conscious formulations. From the reaction formations induced by the educational repression of the instincts we may infer the influence which many of these unbridled instincts exercise in all adult living, and any direct testimony of their objective or subjective dominance will be doubly welcome. The final admixture of instincts and their repression which form character in its broadest sense, will be the next attack for understanding behavior as well as all life reactions independent of immediate social adaptations. With a desire to advance our general progress in understanding the egoneuroses and finally socalled organic disease, this study has been primarily undertaken.

From my data to be presented here and elsewhere, one is at a loss to see how an extension of neural and functional explanation can be of much aid in interpreting the occurrence of conduct disorders as a sequela to epidemic encephalitis. In point of fact there is no evidence that the residual lesion left in the wake of this disorder has any direct bearing upon the conduct syndrome as such, any more than the occurrence of this neurosis in general is caused by an organic lesion. How, then, are we to consider this apparent causal relationship between the organic lesion and its neurotic sequela? I think we must assume quite another relationship than a direct one. We must look upon the lesion here as one that singularly wounds the psyche and personality of its victim, not in a somatic and physiological sense, but in a psychological one. The breakdown of a neural interpretation of a sequential mental syndrome is not unique. It extends equally all over the field of mental disorders following organic cerebral lesions. Very recently Hollós and Ferenczi (1) have shown that even in such a paradigm of a supposedly organic disease as paresis, the display of mental symptoms is greatly to be explained upon the lesion acting as a sort of releasor of unconscious and repressed instinctive forces. On the face of it, aside from the very intensity of endurance of the conduct disorders sequent to encephalitis, the neurotic state does not essentially differ from the same clinical expression where no such lesions occur. That being the case, the direct causal relationship breaks down even more signally than has been shown in the paretic study just cited for the euphoria of paresis and its dire termination may be a unique clinical experience. In other words, there is nothing so like the clinical picture of paresis outside its classic instance in the metaluetic lesion of this well known disorder. All kinds of cerebral lesions in infancy and childhood are singularly apt to leave mental stigma in various forms of mental arrest or enfeeblement which are particularly stubborn to remove. Practically up to the present time, the degree of mental impairment such sustain at the time of their cerebral lesion remains hopeless throughout life. The latter are as enduring as the lesion which seemingly is responsible for them. Singularly enough, however, there is no sustained ratio between the kind and degree of cerebral lesion and the psychic symptoms supposed to

cause them. Many efforts have been made to correlate the lesion directly with the mental syndrome, but these studies have borne little practical result. It has been stated (Southard) that dementia is as marked in cases showing no cerebral lesion as those presenting it. It is also well known that both profound idiocy and epilepsy may also occur without any at present discernible lesion. Hence one might logically infer that the degree and extent of cerebral lesions are independent of any known causal relationship. If this be true, why should we attempt any longer to maintain direct or recondite explanations of the connection between neural and psychic injuries? Yet in spite of this improbability renewed efforts are constantly being made to bridge the gap between neural and psychic patterns upon an organic or physiological interpretation. All of us surmise that there must be some relationship, but the majority have given up any direct causal one. Even Sherrington is frank in saying that at present he sees no possible bridge by which we may connect body and mind. In view of such a despairing state of affairs, any theory which promises a reasonable explanation may be put forward as a tentative line for study.

For a long time we have known that these children suffering from mental and epileptic defects are about as amenable to disciplinary and educational training as their noncerebral lesioned fellows. In point of fact it is often assumed that greater amelioration might be expected in cerebrally injured cases because the inherent germ plasm has not suffered the same degradation as the supposedly hereditary ones. However this may be, both classes are treated when feasible along psychogenic lines, quite independent of any particular cerebral injury which they may have suffered. The lines of treatment which have been found to be of most value are less of the intellectual sort *per se,* but are rather industrial and occupational so that the natural instincts of emotional interest can be best utilized. In other words, the main reliance is placed upon the natural trend of the instincts and the hopeful encouragement to build up the character and personality. Due allowance is placed upon the aid of ambition and esthetic and social stimuli. In brief, the line of treatment holds egoistic appeal in its best and largest sense. How much do we actually know of the wounded psyche in the fearfully handicapped cerebral cases? Practically nothing. Vague guesses by psychometric tests may be made quantatively but how about the qualitative understanding of these children? Is the latter the same as the hereditarily handicapped ones? Probably not. Certainly but few attempts have been made at really understanding the unconscious in these cases; particularly none has been made for the post-encephalitic conduct disorders. The state has been excellently described by social workers, neurologists and psychiatrists, but no deep analysis has been forthcoming. Have they intensive psychic conflicts comparable to the neuroses in which sadistic and homicidal acts occur? We can only surmise that if they do exist they are of a more severe and enduring sort, comparable to those of the savage or the very young and undisciplined child. Moreover, they invariably occur in childhood and adolescents wherein the social or psychic pattern is but recently acquired and is probably most easily upset. The main difficulty in any thorough analysis, up to the present at least, is that this conduct disorder is an ego neurosis, and incapable of ordinary transference or the transference is too slender and unstable to make it enduring through the period necessary to make a complete analysis. Now that we may enter the unconscious of the ego neuroses through the phantasy method I believe that the psychoanalytic study of these cases will be less hopeless and probably no more difficult to study than the stubborn and set epileptic youth. In psychoanalytic terms, these conduct disorders are none other than acute narcistic neuroses organically conditioned. It would seem that the psyche through the disorder of the respiratory and circulatory apparatus is being continually disturbed. We now know from similar neurotic disorders that there is a somatic as well as psychic component of narcism. Various types of hypochondria are instances of involvement of one or both of these conceptual systems. The anal and oral erotic behaviors of these conducts disorders are glaringly manifest in postencephalitic adolescents.

Naturally no one would assume that we underestimate the primordial rôle or significance of the purely somatic symptoms of lethargic encephalitis. The psychic symptoms to which we shall chiefly address our remarks are defect symptoms and irritations directly resulting from the somatic process. The natural symptoms correspond to the inadequate dominance of the psyche over the narcistic libido aggregated and held in, as it were, by the cerebral lesion.

In an attempted hypothetical explanation we may assume that the conduct disorders in postencephalitic children are a special variety of cerebral pathoneurosis in which the ego organ, the brain, has been injured. The excess of the libido complement (narcisism) which has been mobilized to drive the ego to accomplish or fulfill its functions, breaks down the more tranquil adaptations evidenced in the person before his encephalitis occurred. The youthful patient is therefore thrown back upon a utilization of earlier behaviors and stages of development which were once more or less successfully passed. We know that libido is stored up in the total economy of the individual ego. This is the sum total of the libido in the individual organs and their mutual cooperation of organic as well as functional living. This libido gradually divides or directs itself into two main polarities of living, one toward the various erogenous zones and ultimately placed to the service of the sexual aim, and the other toward the preservation of the individual as a personal ego. The interchangeability and cooperation of these two polarities of the libido perhaps enter into every human relationship, but for the time being we shall give our main concern to the ego portion of this total libido formation, as it is the part singularly deeply wounded in the encephalitic individual. This ego libido is not a separate entity for the functioning of these organs, the brain and its adnexa, but enters into the power of regenerating or healing these organs once damaged. A confirmation of this assumption was found in certain observations on traumatic neuroses during the war. The fact was established that a shock accompanied by severe wounding left behind either no

traumatic affect or one much less important than a shock without bodily injury. This apparent paradox becomes intelligible only if one assumes that the narcisistic libido mobilized by the trauma is used (libido which psychoanalysis places as the primary cause of the traumatic neurosis). In the case of an injury received simultaneously, partly in pathoneurotic libido, it is held prisoner in the wounded organ, with the result that it can no longer fluctuate freely, nor operate as a cause of neurosis.

As we may now point out, Freud has shown that there is no bodily organ which does not possess or manifest some essential influence over the total libido. The brain is essentially the organ of the ego function libido, as the peripheral erogenous zones transmit their self gratification ultimately to the genital zone. Thus we have these two great divisions of the total libido acting often in the most elaborated intricacy in the maintenance of social relations.

The lethargic encephalitic process not only produces symptoms of defect but upsets the tranquil order of the narcisistic libido which is manifested in conduct disorders with the ego thrown out of peaceful balance with the outer world. The neurasthenic symptoms are often masked by the lethargic states which master the patient's life. The traumatic neuroses are analogous to this condition. Moreover, as we may rightly infer, as the lethargic state disappears the conduct disorders put in an appearance, usually in proportion as the totality of libido egoistically and objectively is withdrawn from the previous living activities. For instance, we shall see in the brief case notes to be cited, as the lethargy passes away the neurasthenic symptoms are quickly transformed into hypochondriacal symptoms physically manifested, most usually in the field of ambition or ego outlets. When a patient makes use of a narcisistic transference, one notes the marked alleviation of many of the mental and conduct disorders. As Freud states, these actual hypochondriacal neurotic symptoms are the result of the painful storing up of narcisistic libido in the ego functions. If this storing up of narcisistic libido surpasses its utilization in social living, it must be mastered psychically (endured or repressed by effort of will), and if this is insufficient, then the patient exhibits conduct disorders at times of stress or diminished periods of rest. It may be that the continued states of periodic lethargy or sleep are to be explained upon this secondary effort at compensation, acting as a sort of miniature psychic reverberation of the shock of the original lesion, or a reenactment of its affect comparable to the repetition compulsion physically shown in the post traumatic neuroses in tremors and fright as well as the type of dreams. Many of these syndromes in postlethargic encephalitics may be similarly explained on psychogenic reenactment principles, and not solely to a continued ascending and descending generative process sequent to the initial lesion. At least the degenerative lesion often continues to injure the partially corrected functioning of the narcisistically wounded ego organ, and the conduct disorder may carry a just but none the less disquieting compensation for the kind and degree of libidinal outlet normally denied. Thus the conduct symptoms are a pathoneurotic hypochondria of a positive sort not covered by lethargy and may be looked upon as psychic overcompensations for mental defects encountered as well as a pathoneurosis in which there is an intensification of the narcisistic libido provoked by organic disease.

(*To be continued*)

Reaction Types in Cancer

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The more recent physicomathematical contributions of the relativists (1), with their time-space revelations, seem to adequately substantiate the earlier hypotheses of the philosophers Vaihinger (2) and F. A. Lange (3) in regard to the nature of matter. The first mentioned philosopher held the view that "matter forms an entirely empty and meaningless subject for the forces and is but an inaccurate aftereffect of a view which has grown accustomed to the idea of extended and separate bodies and which also assumes substance as bearers of elementary forces." This roughly coincides with the present opinion of Russell (4) who avers that "matter is a logical fiction, invented because it gives a convenient way of stating causal laws..... Matter is, after all, inferred from its appearances which are used to verify physical laws." With this in mind, it seems that scientific investigators should be somewhat chary of talking with too great assurance of mental and physical causations in disease processes. In considering cancer here, it is with assiduity that we have avoided the misleading terms mental and physical.

Kretschmer (5) has demonstrated the synchronous occurrence of constant morphological features with certain psychic disease entities, schizophrenia and affect disturbances for example. To illustrate, he classifies the human organisms under consideration into pyknic, asthenic and athletic morphological types, and he discovers that the latter two are more prone to develop schizophrenic reactions and that the former is usually of the extroverted type so susceptible to affect disorder. Bleuler (6) alludes to syntonic and schizoid types of organisms by way of transcending the dualistic implications of mental and physical aspects. Meyer (7) and his coworkers long ago acquired the habit of considering behavior of individuals in terms of reaction types and personality makeups, in contrast to the older and more rigid classificatory systems. Brill (8) sums up the situation simply in regard to the normal individual by stating that "even in normal persons one often sees the syntonic (pyknic type of Kretschmer, extrovert, manic) changing at puberty to a schizoid, or vice-versa. But, on the whole, one can follow a definite

reaction of a preponderating type throughout life. No one has more earnestly enunciated the importance of studying the organism as a whole than W. A. White (9), who reminds us in no unmistakable terms that "a host of visceral conditions are already recognized as having some sort of neuropathic determiners (spastic conditions in the gastrointestinal tracts such as spastic colon, pylorospasm, etc. which lead to organic changes such as gastric or duodenal ulcer); it is entirely within the scope of reason to look for psychogenic factors in such diseases as diabetes mellitus, particularly of the adrenalogenic type, etc." Working also in this direction have been Kempf (10), with his mechanistic investigations, and Lewis (11), stressing the constitutional factors in psychic disorders by noting definite somatic changes taking place in cases of schizophrenia in contradistinction to unlike somatic changes occurring in affect disturbances and paranoia.

In cancer, similarly, the cases studied tended to group themselves rather consistently into similar morphological and personality reaction types.

The cases studied were grouped as follows: ten normal cases, fourteen autopsied psychopathological cases, five living psychopathological cases.

In the normal cases, morphological grouping, according to Kretschmer, was effected, in addition to rather detailed personality studies after the manner of Amsden and Koch. Due emphasis was laid on the organism types of Bleuler (syntonic, schizoid, etc.).

In the living psychopathological group, the case histories were briefly abstracted from the hospital records, and a short description of the psychic problem was included in addition to a statement of the hospital diagnosis. The autopsied psychopathological cases were considered only from the viewpoint of the hospital diagnosis and the autopsy findings.

The manner in which these organismic reactions were studied is illustrated by the two type cases appended below, the first being a nonpsychopathological case, the second a psychopathological one.

Following this, is presented a table, which it is hoped will be selfexplanatory.

A NORMAL CASE

CASE I.—White male, aged fifty-six, seen in private practice.

Kretschmer features.—This man was a robust, plethoric individual of medium height. Extensive rolls of fat were superimposed on the flabby musculature and loose connective tissue work of the body. He had an unusually large head, with high forehead and hair extending well back from the brow. His eyes were large and deeply set and his gaze was rather direct and severe and commanded respect. His mandible was heavy and suggested tenacity. The huge cranial case, the Irish nose and the short, thick neck gave the man a distinct bull dog effect.

Longitudinal section.—Even as a child, this patient was said to be selfwilled and stubborn by those who knew him best. He was the type who, after being soundly flogged for an offense, would impishly, and even impudently, repeat the tabooed cavorting. On the other hand, however, he manifested at times marked signs of tender heartedness. When any of his family were in trouble, he, too restrained by pride to be observed giving in to his feelings, would come in with his face tear streaked and proceed brazenly to avoid any suspicion that he had been at all moved. In play at school, he was looked up to as an undisputable captain in games of the rougher sort. When volunteers were called for pranks of more hazardous variety, he invariably would choose the part that required grit. His teachers regarded him as a brilliant student but an uncertain one as far as deportment was concerned. He married at twenty-five, shortly after organizing a business in New Orleans, which incidentally has been a thriving one. He managed to support a family of six from the proceeds of this business. The atmosphere about his home, according to his wife, was always cheerful and lively though one significant glance from "the old man" was sufficient to bring about a quiescence of activities. In business and social activities, this man was extremely active, in fact, an officer in two leading business clubs. Further, he and his wife entertained frequently, surrounding themselves more particularly with warm personal friends rather than more impersonal social acquaintances.

Cross section.—If a stranger were asked to label the distinct characteristics of this man's behavior upon first seeing him, he would unhesitatingly refer to his brusqueness. When I first came in contact with this man, I remarked upon this trait to his wife and she said: "You just don't understand him—that apparent gruffness he has developed to serve as a mask for his tender heartedness." He discussed his life very freely and extracted not a little secret amusement out of attempting to frustrate the "kiddish looking" doctor. Once that superficial crust had been penetrated, the examiner discovered a most charming and engaging personality, and before his several weeks of conversations had terminated, we had formed a very warm friendship. His approach was always prefaced by that mock severity which I later found to be in reality his playfulness.

Cancer symptomatology.—He had an extensive carcinoma of the rectum which had manifested itself in years of digestive disorder and which culminated in intestinal obstruction, finally leading to his demise.

A PSYCHOTIC CASE

CASE II.—*Kretschmer features.*—This was a large woman, tending toward obesity. The size of the bulky breasts and of the pendulous abdomen gives the thoracic and abdominal regions a circumference out of proportion to that of the thighs. The cranial case was very large for a female and the forehead was high and spacious. The nose was broad and stubbed and the lips full and firm. The heavy mandible and prominent mental processes tended to complete a rough outline of a hexagon. A line drawn from the centre of the forehead to the point of the chin would be very close to straight. The facial expression was frank and forceful; her gaze was alert and bespoke interest in her surroundings.

Longitudinal section.—Patient's father was eccentric and mother was a suicide when patient was seven years old. She was then sent to a young women's home. Her school life was uneventful and she seemed to make quite a satisfactory adjustment. She married at twenty-two a rather successful newspaper man in Cincinnati. The patient, being rather sociably inclined, developed rather grandiose ambitions

to become prominent in society. Her husband, becoming unable to cope financially with her extreme demands, was finally forced to yield to divorce. He was very reasonable, however, and paid generous alimony; in fact, enough to send his wife and daughter to Paris, where the latter could learn French. After remaining in Europe for six years, the patient returned to America, and her first mental symptoms became manifest. She developed ideas of her husband's unfaithfulness and alleged that he was spying upon her, and in addition that various men whistled at her with the intention of making a conquest.

Cross section.—Upon admission to the hospital she harped dramatically upon being grossly insulted by various men. She was quite communicative, however, and seemed to obtain pleasure in her misery, that is, by affecting dramatic byplays to attract the examiner's sympathy. She projected her difficulties on various men with whom she would come in contact about the grounds and was always eager to pour out her tale of woe. The mental reaction was a rather typical paranoid type, and only adds to our conviction that the paranoid mechanism is more often linked with extroversion than with the shutin personality.

Autopsy.—She succumbed to carcinomatosis of the liver. The autopsy revealed, in addition, a moderate arteriosclerosis and myocarditis and general glandular hypertrophy.

REACTION TYPES

	Bleuler-Brill		Kretschmer			
	Schizoid "Shut-in" Introvert	*Syntonic Open Extrovert*	*Asthenic*	*Athletic*	*Pyknic*	*Mixed*
Ten living normal cases	2	8	1	2	7	0
Six living psychopathological cases	1	5	0	1	5	0
Totals	3	13	1	3	12	0

DIAGNOSTIC CHART

(St. Elizabeth's Hospital Diagnosis)

	Hebephrenic	*Catatonic*	*Manic*	*Paranoid*	*Epileptic*
Six living psychopathological cases	1	0	2	3	0
Twenty-one autopsied psychopathological cases	1	0	5	13	2
Totals	2	0	7	16	2

No cases of endocrine dysfunction were discovered among the living cases.

Three paranoids and one manic among the autopsied cases were found to have general circulatory and glandular hypertrophy.

It is evident hence that even by excluding borderline types, ninety per cent. of the cases studied fall unequivocally into the category of extroversion and syntony. Shut-in types are conspicuous by their scarcity, there being only two present in the whole series.

Among psychopathological cases, paranoid mechanisms and affect reactions constitute the rule. Reversely, no catatonic types are present and only one case was diagnosed hebephrenia. Further, no case could be placed in the asthenic group of Kretschmer's reaction types.

It should be noted that in the presentation of the reactions in these cases no mention was made of the rôle played by psychic conflicts in tissue proliferation. In my own experience I have not been able to connect definitely the appearance of cancer with the predisposing psychic conflict. In one case, however, the cervical carcinoma occurred in a rather suggestive time relationship to the thwarting of a desire for a large family, the childbearing being suddenly and rudely halted by a husband's unfaithfulness. The patient's apparent reaction was a development of a lasting antipathy toward men plus the excitation of a tissue protest—Nature's seeming protest against interference with her biological processes. Similarly, in another there developed a carcinoma shortly subsequent to the death of a brother. He incidentally succumbed to an attack of melancholia following the demise of this same relation. Though these factors are possibly inconsequential, I merely mention them for what they are worth in view of the fact that Goddeck (12) reported a tumor of the breast occurring concomitantly with an unmistakable conflict in one of his cases. The tumor proved to be noncancerous because of its disappearance but was diagnosed clinically by a cancer specialist as malignant. The swelling was attributed to the memories of a copy of Titian's "Flora" which had hung over her parents' bed, but was more deeply related to what occurred at the time of her mother's second confinement, when the patient was obliged to assume the nursing responsibilities of a younger sister for whom she developed strongly libidinous ties. The synchronous disappearance of the tumor, with euphoriation and exposure of the undeniable homosexual complex, led the author to assume a psychic foundation for the somatic transmutation. Any assumption of this sort would be warranted, however, only by the complete exclusion of all other possible foundations for these tissue changes by means of exhaustive methods. Deutsch (13) is convinced that "the psychic conflict may express itself in pathological changes in organs over which the patient has no conscious control." He mentions further that tumor of the stomach has been produced by nervous stimuli and "can continue to be formed provided the stimuli worked long enough and be of sufficient intensity."

In spite of the fact that these studies fail to conclusively establish a psychic foundation for somatic change, they at least validate the contention that the solution of the cancer problem will lack completeness so long as the psychic component be regarded as a negligible one. Though the discoveries of Gye and Barnard (14) are possibly epochmaking in their significance, the fact that the predominantly syntonic types of human beings appear to possess a greater susceptibility for malignancy than the less retaliative schizoid ones cannot be disregarded.

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The Infectious Nature of Facial Paralysis

With Report of Cases Due to Focal Infection

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All of the older and most of the recent literature and textbooks on the subject, give exposure to cold as the etiological basis of Bell's palsy, in about seventy per cent. of cases. Eighty per cent. of all cases of paralysis of the facial nerve are of the peripheral type—complete motor paralysis. Since first described by Charles Bell in 1823, it, more often than any other peripheral nerve, is affected alone (Steinart) and the explanation of its cause has remained an enigma in the practise of medicine. Bell's description of facial palsy chiefly concerned itself with the flaccid condition of the facial muscles, the rolling up and out of the eye on the affected side on attempts to close the eyelid and did not note the disturbances of taste, smell, and hearing. The majority of patients probably have some of the latter symptoms if inquiry is made. The "exposure of the face to cold or prolonged drafts of air, of sudden chilling of the body while in a state of perspiration" is supposed by recent authors to happen in patients of the type known as the rheumatic group, and it is supposed to be, therefore, in these patients that the great majority of cases of paralysis of the facial nerve appears. Neumann and Charcot attribute the nerve palsy to inherited nervous disease susceptibility, and not to the effects of chill of head or body. From all sorts of fantastic explanations the majority of writers on the subject have attributed it to socalled exposure.

Some of the theories advanced in elucidation of the phenomena have been unique, Reik believing that in the peripheral form in most cases the middle ear is involved. At first supposed to follow exposure, about which the patients are closely questioned, this history was obtainable in about seventy per cent. of the cases. Then the neuroanatomical theory (Phillips) was advanced of the bony canal being congenitally narrow where the nerve makes its exit from the skull, an elaborate series of measurements taken and tending to substantiate this theory, a considerable variation was found to exist in the specimens examined (Leiner). The diameter of the stylomastoid foramina even differed in the same skull, the right being found in a large percentage narrower than the left, and in different specimens ranged from a hair's breadth diameter to one quarter inch in size. It can be stated now that when one considers the size of such a canal, after the lumen is still further narrowed by the lining periosteal membrane, the slightest effusion at this place would easily make the necessary pressure to stop function in the nerve. Palsy of the right side does occur clinically twice as frequently as on the left side.

Later the socalled rheumatic group was projected into the exposure theory and careful investigation found that a majority of cases of Bell's palsy occurred among the socalled rheumatic type, although this is denied by some and this dissenting view is supported by the fact that treatment along rheumatic lines gives no relief in the disease. After analysis of all the theories on which the etiology of facial paralysis is based, the fact remains that while exposure and narrow canals may be predisposing causes of facial palsy, neither these nor any other proposals so far advance a satisfactory explanation, unless as a basis, infection about the head is taken into account. With the presence of infection in close proximity to the nerve, it is not difficult to understand how these foci become active in the production of nerve involvement when the general bodily resistance of the individual is temporarily lowered by chill of air, moisture or what not.

Pershing states that "rheumatic and idiopathic cases should always be regarded as possibly infectious and a thorough search be made for a primary focus," and he advocates "prompt removal of any source of infection as the paramount indication." Dana in his textbook on neurology believes that Bell's palsy "is a microbic infection similar to that of 'colds' and influenza and that it is not a rheumatic disease but an infection and should be so classified." Jackson thinks a few cases seem of toxic origin. In April, 1925, Dabney specifically calls attention to the infectious nature of facial paralysis and reports four cases in which prompt amelioration and cure resulted where infective foci in the head were eradicated. He believes every case of Bell's palsy of toxic origin and says, "if careful search be instituted, the causal factor can be found."

The seventh cranial nerve, motor nerve of muscles of expression of the face, arises from a nucleus in the pons, the fibres passing towards the floor of the ventricle, curving around the nucleus of the sixth nerve, and emerging with the eighth (acoustic) nerve, between the olive and restiform body and with the auditory nerve enters the internal auditory meatus of the petrous portion of the temporal bone. Shortly before or just after entering the internal auditory meatus the geniculate ganglion is formed. The facial nerve after entering the internal auditory foramen traverses the bony canal called the aqueduct of Fallopius and issues from the stylomastoid foramen through a short course into the parotid gland, emerging upon the face just under the lobe of the ear, dividing into many branches to the face muscle. In its path through the aqueduct of Fallopius the facial gives off the branch to the stapedius muscle and is joined by the chordatympani nerve carrying taste fibres from the anterior two thirds of the tongue, and secretory fibres to that region. It should not be forgotten that in reality the facial is a mixed nerve conveying both motor and sensory fibres. According to Starr the facial nucleus is closely joined to many other cranial nerve nuclei by association fibres. This gives an anatomical basis for the many reflex and automatic acts in which the muscles of the head and face take part. In the acts of winking, breathing in motions attendant on sensations of sight, sound, taste and smell as well as vari-

ous bodily sensations, changes of the facial expression are constantly seen which are automatic. Mental states are also reflected in the face unconsciously and this is secured by an intimate association of facial nuclei and the centres in optic thalamus.

The muscles supplied by the facial are the platysma and buccinator, those of the external ear, and posterior surface of the digastric and and stylohyoid. Its chordatympani branch is the nerve of taste for the anterior part of the tongue, it is also a vasodilator nerve of the submaxillary and sublingual glands and its tympanic branch supplies the stapedius muscle.

The facial muscles supplied by the seventh nerve act upon the angle of the mouth especially those that elevate it, on the eyelids, especially the lower, elevating the latter and assisting in closure of the eye, also on the forehead enabling the brow to be wrinkled and the eyebrow raised.

Markowski and others have found parenchymatous degeneration from the geniculate ganglion downward to the periphery. The peripheral branches contained many degenerated fibres and a few remaining globules of myelin in a state of degeneration and many little fat cells. Some of the branches contained normal as well as degenerated nerve fibres and few degenerated fibres were found in the superficial petrosal and stapedius nerves. The findings were purely a degenerating neuritis without participation of the neurillema.

The disease may be occasioned by a variety of organic lesions and the cause together with the gravity of the condition depends upon the nature and site of the lesion. The paralysis may occur not only from a lesion of the nerve trunk itself but from interference with the nerve fibres at any point in the motor tract between the cortex and the facial nerve nucleus in the brain. Cortical paralyses produced by a lesion above the nucleus are less complete than is a lesion in the nerve itself and the eye can be partially closed, the eyebrows elevated and forehead wrinkled, the lower part of the face being the area chiefly affected. Hemiplegia is an example of this supranuclear palsy and the facial paralysis is but one of the symptoms displayed. Paralyses coming from a lesion in the facial nucleus in the pons are known as nuclear lesions. In these paralyses, the whole face is usually involved, the sixth and eighth cranial nerves may be affected and bulbar and other symptoms of basal involvement are usually shown. If the eighth nerve is involved with the facial there will be vertigo present. Isolated nuclear paralyses suggest syphilis and diphtheria. Of interest to the otologist especially, inflammation of the geniculate ganglion alone manifests itself by an herpetic eruption in the external auditory canal and outer ear. Many unexplanable pains of the ear, neuralgic in character, without any apparent lesion of the membrani tympani or adjacent structures, can be due to geniculate ganglion involvement and these may be the first symptoms of a facial palsy.

The diagnosis of the location of a lesion in the course of the nerve itself is not difficult. When in the course of the nerve the electrical reactions are lost, and when the lesion is central, the reactions are retained. If the nerve is affected at a point where the branch to the stapedius is given off, ear symptoms of tinnitus and hyperacusis are present. If the nerve is involved in the Fallopian canal where it is joined by the chordatympani there is loss of taste in the anterior two thirds of the tongue. This involvement of taste does not occur if the lesion is close to the exit of the facial from its bony canal. The typical complete Bell's palsy is that produced by lesions below the points at which the chordatympani nerve joins and taste and ear are not involved.

Lesions within the cranial cavity which produce facial paralysis are basilar meningitis, abscess, softening, hemorrhage, tumors, or exostoses at the base of the brain, syphilis or aneurysms in this location and any cases of intracranial tension.

In the Fallopian canal facial paralysis occurs in hemorrhage or inflammation, caries of the petrous portion of the temporal bone, acute and chronic otitis media, tumors in this region, fractures of the temporal bone, syphilitic lesions located here and it has been reported to occur from impacted wax in the external auditory canal. In cases of basal fracture besides the facial paralysis the eighth cranial and petrosal nerves are affected.

After the exit of the facial nerve from the skull, palsy has been noted in childbirth, with or without the use of instruments, glandular disease at the angle of the jaw, parotitis and surgical trauma.

Not infrequently, facial nerve palsy has accompanied infantile paralysis. It is to be noted also that recovery of function in the facial nerve has followed this disorder. In a few instances it is congenital and it has followed tonsillitis, diphtheria, scarlet fever, erysipelas, smallpox, anemia, alcoholism, typhoid fever, herpes, tetanus, influenza, tuberculosis, and occurred after the use of chromic acid in the mastoid bone. Oppenheim tells of bringing on a Bell's palsy by applying ice to a patient of his who at the time had tonsillitis. Infrequently, bilateral facial paralysis occurs and De Castro is the authority for the statement that ninety-five per cent. of these bilateral cases are syphilitic in origin. Also bilateral paralysis occurs occasionally in multiple neuritis. In a small number of cases of Bell's palsy the cause is supposed to be impossible to ascertain. One attack of facial paralysis predisposes the patient to another seizure and the disease happens more often in adult life between the second and fourth decades. In seven per cent. of the cases there are recurrences and in adults the same percentage is due to otitis media. Bell's palsy is found in females twice as frequently as in males, and occurs slightly more often during the warm months of the year than during the cold, as out of 139 cases reported by Leiner, seventy-nine occurred between the months of April and September.

The facial nerve is more often affected after its exit from the skull, either as simple neuritis, surgical or that occurring spontaneously in acute or chronic otitis media, the latter more often in children. In infancy owing to congenital clefts in the osseous formation there is greater danger in infantile otitis of peripheral paralysis of the facial nerve than in otitis media of the adult. The paralysis, however, in infancy is slight and disappears in a few days or weeks. That following acute inflammation of the middle ear in the adult is of infrequent occurrence but follows more often chronic suppurative otitis media. When the facial nerve becomes involved

from the ear, it is either an inflammatory neuritis or occurs from pressure upon the nerve from exudation either in the Fallopian canal or middle ear. As caries of the bony wall may take place even in the acute stage, the nerve may become paralyzed early in the course of the ear disease. The nerve has been found postmortem lying free in the tympanic cavity surrounded by pus and yet no symptom of involvement of the facial noted in life. From this observation one would conclude that compression either in the bony canal of the aqueduct or a blocked middle ear is the importnat factor in paralysis occurring during otitis media.

Treatment of facial paralysis as a sequel of otitis is directed to the ear, if there is absence of mastoid signs, by promoting free drainage incision, if drum be intact or only a small opening present. If paralysis persists in spite of free drainage, electricity and massage should be employed. Paralysis of the facial can resolve without mastoid operation as Jones reports a case of facial paralysis in acute otitis, recovery taking place in twenty-five days by treating middle ear conditions alone. Paralysis of the facial nerve is a cardinal indication for operation if the mastoid bone is involved, but the prognosis for restoration of function is not good. Voss, however, reports relieving facial paralysis of several months' duration by opening the mastoid and cleaning the antrum of hyperemic spongy tissue.

Surgical operations on the mastoid bone, especially where the radical operation is performed, are responsible for most of the operative cases of facial palsy due to either partial or complete section of the nerve, or the effects of shock or by localized edema or reactive processes in the contiguous tissue. If the paralysis is from the latter two causes recovery will take place. In children, owing to the small development of the mastoid process, the facial nerve lies superficially and consequently extreme care must be used in the young in performing even the simple mastoid opening, when drainage from the antrum only is sought. Also in the removal of large glands in the neck in children the nerve has been severed and extreme caution must be exercised to avoid injury in this operation. During the radical mastoid operation the nerve is frequently injured in the removal of the bridge between the antrum and middle ear, also in attempting to lower the posterior bony wall of the external auditory canal, to the level of the horizontal semicircular canal and in, curetting in the region of the superior internal wall of the attic.

The question of personal appearance is of the greatest importance, because all patients, and especially those who are young, are conscious of the immobile, masklike expression of the face. When the lesion is outside the skull all muscles of expression are affected except levator palpabrarum together with posterior surface of digastric and stylohyoid. Besides being unable to express themselves emotionally, there is difficulty in eating, drinking, talking and control of lips. The angle of the mouth drops and the ala nasi on the paralyzed side cannot be distended as on the healthy side. Drooling from the mouth occurs and there is troublesome lacrymation especially in the wind and cold.

Lacrymation is present because of the involvement of the orbicularis palpebrarum, the punctum no longer being held against the globe, consequently the tears can no longer make their way into the lacrymal canal but overflow the cheek. Neither winking or closing the eye is possible. Taste and smell are affected in some cases. There may be pain preceding paralysis in the ear and face with twitching of the muscles; and some deafness. After the attack, tinnitus and hyperacusis may be present. This unusual acuteness of hearing and the tinnitus are due to tension of the drum membrane from paralysis of the stapedius muscle. In the majority of cases the paralysis develops in a few hours and the face remains completely paralyzed for several weeks. Full recovery takes weeks or months and in a few cases the condition becomes permanent. Dana's observations show that Bell's palsy lasts from three to five months, mild cases recovering in one month. Secondary contraction of the muscles supervenes in about two months after the paralysis begins and there may be also twitchings and spasms of the muscles very annoying to the patient. If the patient does not recover from the disease the electrical irritability of the muscles gradually diminishes and is finally abolished.

In cases where the lesion is at the location of the geniculate ganglion the symptoms are herpes of the ear canal and pain and cutaneous anesthesia—Hunt's syndrome.

The prognosis of facial paralysis depends on the site and character of the lesion. The majority of cases clear up because they are cases of simple neuritis and therefore the more distal the nerve involved, the better the prognosis.

Congenital facial paralysis, if the result of failure of development of the nerve and muscles in the medulla, obviously will not recover. Lesions of the upper neurone affecting the brain or those on the surface of the brain are not likely to recover spontaneously. Partial recovery only may be expected in some cases and in cases where secondary contraction has taken place no recovery is to be expected. According to observations noted in cases of facial paralysis persisting, only slight recovery is made after four years. In postoperative cases, no recovery is to be expected if the nerve fibres have actually been severed. In cases also as a sequel to operation where it is not known whether actual severance is present, if the case is not showing improvement in six weeks, recovery is not likely. In operative or nonoperative cases if the reaction of degeneration be present which comes on after a couple of weeks, then a guarded prognosis should be made, as recovery may be a matter of some months, or not at all. However, the presence of electrical response is always a hopeful sign. Operation after several months' duration of the palsy may be thought of. This contemplates an anastamosis of the facial with the hypoglossal or the facial with the spinal accessory, but the result gained is questionable.

My attention was first called to the possibility of the infectious nature of facial paralysis by the quick recovery of a patient in one case following drainage of an antrum and in another by the prompt recovery from the disease following removal of infected tonsils. The response in these cases from removal of foci of infection was so prompt that I immediately

looked up the literature on the subject and found that one author had already reported four cases of facial paralysis, where the same results had been obtained on removal of infected points. Dabney's paper published in April is so far as I know the first to call attention to the infective nature of Bell's palsy.

CASE REPORTS[1]

Case I.—Male, sixty-four years of age, presented himself on August 11, 1925, complaining of pain and muffled tones in right ear for a few days. A small quantity of cerumen was removed from the canal at this time but the lumen of the canal had not been closed with the wax. Previous history negative. Three days later he returned with a right sided Bell's palsy with tinnitus which he had just noticed that morning upon arising. This patient presented no nervous disease symptoms. His main complaint outside of the facial deformity was that he could not keep his false teeth in position as he could not move his lips or mouth without the upper plate falling down and consequently he could not eat. He was referred to Dr. J. E. McCorvie, an internist of this city, for general examination and the following report was given.

"Patient on arising had noticed the right eye felt peculiar and his daughter stated to him that the eye 'looked funny.' Patient is a stockily built man, weighing 177 pounds, with blood pressure 196 systolic and 96 diastolic. Pupils and eye movements normal. Paralysis of the right facial nerve present, evidenced by lack of movement of the forehead, angle of mouth, and inability to close the eye on that side. Could not detect the taste of salt on the right half of tongue anteriorly. Heart enlarged, being four by eleven centimetres. Abdomen and genitalia negative. Knee jerks slightly reduced.

Urine and blood Wassermann examination negative. Blood hemoglobin 90 per cent., red blood cells 4,656,000, white blood cells 9400 per c. m. Temperature and pulse normal. Dr. McCorvie put the patient under general treatment as to diet and living on account of elevated blood pressure, and informed the patient that facial paralysis usually clears up but takes weeks to months to do so."

On September 1st, patient returned to me because of pain in right ear and along the region of the sternocleidomastoid muscle. He informed me that because of these pains he had, since August 11th. been compelled to apply heat several times during the night. The palsy was present exactly as when the patient was first seen. On examination the external ear, canal and drum were normal and no tenderness over the mastoid region was found. Hearing was normal. Transillumination of the antrum showed dark left antrum and x ray picture verified diagnosis of chronic left side antral disease and in this case known as a silent maxillary antrum. Nasal examination revealed slight amount of pus in the lower nares and in the region of the middle turbinate. Suction brought out a large quantity of thick greenish yellow pus from the left nares. The following day improvement was noted in the palsy and complete function of the nerve followed in four days. The nasal discharge became lessened in amount but continued in spite of daily treatment. After three weeks' trial of local treatment puncture of the antrum under the lower turbinate was made and irrigation every few days for two weeks until discharge ceased.

Case III.—I did not see this patient and the case occurred in the practice of Dr. F. M. F. Meixner who kindly gave me the history and to whom I am greatly indebted for the report of the case.

Female, aged twenty-four. General history and examination negative. No nervous disease symptoms. On June 27, 1925, she had an attack of acute follicular tonsillitis manifested by sore throat, nausea, delirium and pains in the neck; temperature 102°. This attack lasted ten days accompanied by swelling of the glands of the neck and some socalled rheumatic pains in the feet and wrists. On July 27th, she awakened from her sleep and found her face was "crooked," as she expressed it. Dr. Meixner found a facial paralysis on the left side accompanied by tinnitus in that ear. Taste was not involved. Treatment to the tonsils and local applications to the face together with galvanism was instituted. Continuation of this treatment for one week brought some recovery of function in the muscles about the mouth. Tonsils were cryptic with exudation of pus on pressure and the pillars were markedly injected. On account of the unsatisfactory progress of the case, advice to have tonsils removed, was given. Tonsillectomy was performed August 10th. There was immediate improvement during the week following operation and the patient was discharged as cured a month later.

Dabney's cases, one occurring from an infected antrum, two from infected teeth and the fourth from infection in the tonsils, were as follows:

Case I.—Male. Palsy attributed to "exposure to draft of air while overheated." Patient had an acute empyema of antrum and tonsillitis. In this case irrigation of antrum started restoration of function of nerve in thirty-six hours and complete recovery in ten days.

Case II.—Male. One attack of palsy five years before and both of these seizures attributed to exposure to cold. Removal of infected tonsils started nerve function in two days and complete recovery in two weeks.

Case III.—Male. Second attack of facial paralysis in six months, attributed to exposure to cold. Recovery to nearly normal in three months. Fifteen months later another attack for which an infected tooth was extracted and complete and permanent cure resulted.

Case IV.—Female. Facial palsy attributed to draft of cold air. A root infection of tooth was responsible and complete recovery followed extraction of tooth in ten days.

Dabney demonstrates by these cases that the cures are not coincidental because he points out that any line of treatment was inefficacious by the older methods. With all methods of treatment used heretofore it was a matter generally of months and by surgical intervention now definite cure is a matter of days.

He also reminds us that fundus lesions of the eye showing exudate and effects of infection, sixty per cent. are due to apical tooth abscess, twenty-five per

[1]The report of Case II was omitted for lack of space. It will be included in the author's reprints.

cent. to diseased tonsils, ten per cent. to nasal sinus diseases, and five per cent. due to foci scattered through the rest of the body, gallbladder, genitourinary and intestinal tracts.

His conclusion that "there is a definite connection or presence of infection in cases of Bell's palsy and that every case will show some focus of infection in the head or body and that this infection is the true cause of every case of facial paralysis," seems to be well founded and from my own observations I heartily concur with these views. There undoubtedly will be within the near future, reports of many cases of Bell's palsy where removal of infective foci will bring timely amelioration of symptoms and effect a permanent cure of the disease. I believe verification by ample clinical evidence will be made of the assumption that facial paralysis, of the Bell's palsy type, is a simple neuritis, infective in origin in every case.

A bibliography will appear in the reprints.

Amnesia Following Encephalitis Lethargica*

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Case.—Mr. S. S., fireman engineer, forty-two years of age, weight 190 pounds, height five feet six inches, married nineteen years. He has one living son eighteen years old. The patient called at the office Saturday night, September 12th, complaining of severe headache and some dizziness of one day's duration. He had some prodromal symptoms for the last seven to ten days, viz., malaise, fever, loss of appetite, and on September 11th a severe nosebleed. All of these he tried to fight off as an ordinary cold. His temperature was 103.8°, pulse 100, but there were no other clinical symptoms.

He was ordered to go home and stay in bed. The next day his temperature dropped to 100°, but the severity of the headache still persisted. On the third day the family noticed that he was delirious at intervals, at times apathetic, stubborn, and irrational. On the fourth day he seemed to be slow in answering questions, generally indifferent, and his delirium was more pronounced.

When it was suggested that he be removed to a hospital for further treatment he showed no interest whatever. The working diagnosis at that time was either influenza or typhoid infection.

He was placed in the men's 4-B ward of the Samaritan Hospital, Tuesday, September 15th. On admission his temperature was 103°. He slept most of the time. When aroused and asked as to his condition he complained of a headache and abdominal pain, but otherwise he was in a constant sleep, rather hard to arouse, answered questions slowly, and most of the time irrational. There were pin point pupils, but no meningeal symptoms, no ptosis and no paralysis. Heart, lungs, urine, reflexes, were all normal. With the development of the above mentioned symptoms, the diagnosis of encephalitis lethargica was selfevident.

Dr. W. Egbert Robertson saw the patient on the fourth day of his illness. He confirmed the diagnosis of encephalitis lethargica and suggested that the patient be given a trial of spinal fluid by injection every twelve hours for three doses.

Dr. Peters made an ophthalmological examination and could not find any diplopia or any other abnormalities.

The patient lay in bed sound asleep, snoring all the time. The snoring was getting louder day by day and he could be aroused only after some effort, and that only for a few seconds. When asked to open his eyes or to stick out his tongue he would do so. He would also make an attempt to answer some questions and would go to sleep while talking incoherently.

At times, especially during the first week, he was restless and would remove his gown. On many occasions he would get out of bed and urinate on the floor, and the nurses would have to put him back into the bed, and were obliged to strap him down until the services of day and night nurses were procured. He would often lie very still, with his eyes wide open staring into space, picking at his bed clothing. For a few days he had a twitching of his right hand and the right side of his face.

Respirations were short and rapid, forty to fifty a minute. Beginning on the fourth day of his illness Cheyne-Stokes respirations gradually began to develop which were getting more and more pronounced, lasting for three weeks.

The patient had difficult and painful urination. In the second week of his illness he voided little for two days. There was some distention of the bladder which perhaps caused the abdominal distress.

He was in a lethargic state for twenty-eight days. At times he snored and at times the sleep was very quiet. With all this he was able to speak and answer questions when aroused, or upon awakening, but this would last for only a few seconds.

Nourishment was difficult. However, two special nurses managed to push a great deal of liquid food into him every hour. Once he almost choked on a mouthful of food, falling asleep while in the act of swallowing.

He had involuntary movements all the time, even at the time of his release from the hospital. A striking peculiarity was an extreme dryness of the skin and the mucous membranes, although at times he had profuse sweats lasting from one to two hours, so that a change of bed clothing was necessary.

On the eleventh or twelfth day a glandular swelling appeared between the angle of the lower jaw and the ear on both sides. It was very painful to the touch and was probably responsible for the twitching of the facial muscles which was noticeable after the appearance of the glandular swelling.

*Read before Samaritan Hospital Medical Staff.

During the third and fourth weeks he had some rigidity of the neck, twitching of the extremities and very pronounced Cheyne-Stokes respirations. The prognosis appeared to be extremely grave.

COURSE OF TEMPERATURE

For the first and second day after his admission the temperature stood between 103° and 100°. For the following nine days the temperature ran between 102° and 100°. From the eleventh day to the fifteenth the temperature was between 99° and 98°. On the sixteenth day the temperature rose to 102°, and went down to normal in two days. This rise in temperature was possibly due to an infection of a subcutaneous injection. For the remainder (three or four weeks) the temperature was normal.

LABORATORY FINDINGS

The Widal reaction was negative. The urine was negative. Blood counts were as follows:

	September 16, 1925	*September* 30, 1925
Red blood cells.....	5,150,000	4,000,000
White blood cells	10,150	13,000
Polymorphonuclears	70	74
Small lymphocytes	17	18
Large lymphocytes	1	5
Mononuclears	3	1
Transitionals	2	2
Polymorphous eosinophiles	1	0
Polymorphous basophiles..	0	0

Wassermann, negative
Spinal sugar, .036 per cent.
Spinal globulin, 3+

SPINAL PUNCTURE

On the third day a spinal puncture was made for diagnostic and treatment purposes. Sixty c. c. of fluid was withdrawn under very high pressure. This fluid was injected into the gluteal muscles as suggested by Dr. Robertson. A second lumbar puncture was made and thirty c. c. of fluid was withdrawn under normal pressure with negative laboratory findings, therefore, no further lumbar punctures were made.

RECOVERY AND FURTHER DEVELOPMENTS

One night at the beginning of the fifth week the patient suddenly woke up and began to talk to the nurse about his wife, son, and family troubles. He also expressed the desire to go to work the next day.

From that time on he began to be quite awake at times. For the first week of his recovery he did not talk, except on the one occasion as stated, although he was awake at intervals for an hour at a time. In the second week of his recovery phase he began to talk a great deal incoherently. The periods of awakening were longer every day, and ordinarily he would appear as a man normally recuperating from a severe illness. He also began to sit up in bed and feed himself.

Symptoms of amnesia were evident at the sixth week. The man didn't know anybody by name; didn't know anything about his past or present; couldn't remember names, even of his immediate family; couldn't remember faces of visitors. He didn't know that he was in a hospital; he didn't know where he worked; he didn't have any shame or fear, in other words, his actions and behavior were similar to an infant one year old. He would have involuntary movements in bed, or go out of bed naked, unless watched by the nurses. With all this he knew his own name and could read newspapers and magazines, but he did not know what he was reading.

The nurses were instructed to train him, to teach him names, but it was all without any impression, even up to the time of his release. He would always make an attempt at conversation but it was always illogical and incoherent. He did not have any hallucinations or delusions. He was not violent. When wheeled out on the porch on the rolling chair the scenery and sights did not have any effect upon his memory. In other words, his mind was absolutely blank. Mentally he was not recuperating as well as physically.

TREATMENT

The first few days sedatives were necessary to relieve the restlessness and delirium. To reduce the temperature quinine urea hydrochloride in five grain doses was given every three or four hours, also large doses of potassium citrate, until the temperature reached 100°.

In the third and fourth weeks when collapse was threatening, digitalis, in ten and fifteen m. doses by mouth, was used several times a day in conjunction with caffeine citrate five gr. intravenously twice daily, and six gr. of camphor in oil were used in the gluteal region every four hours. For a few days aromatic spirits of ammonia was also administered, one dram every three hours.

At the suggestion of Dr. Bochroch the patient was given hot packs once daily for a few days, but this had to be discontinued because he did not react well.

In addition to the symptomatic treatments mentioned, a few other drugs were used, for the purpose of ascertaining their value in encephalitis lethargica. Stock ampoules of thirty-one gr. of sodium iodide in twenty c. c. distilled water were given intravenously every day for one week. It did not seem to make any difference, however. We stopped the iodides and administered neoarsphenamine; nine tenths grams were given every day for four days, with no effect.

An attempt was made to use salicylates intravenously, but no further intravenous medication was possible because of the collapse and damaged veins resulting from the neosalvarsan. However, twenty grains of sodium salicylate were given four times daily, which was continued up to the time of his release in conjunction with large doses of iodides and urotropin, alternately.

COMMENT

Encephalitis lethargica seems to be a selflimited infectious disease. While no specifics are known as yet, we merely had to resort to plain common sense symptomatic treatment, such as forced feeding; sedatives or stimulation were necessary as the occasion demanded. On looking over the patient's chart it seems that his recuperation coincided with the administration of large doses of sodium salicylate after a week's duration. His entire loss of memory and his infantile mind and behavior were among the striking peculiarities following this case of encephalitis lethargica.

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Historical Medicine

Dioscorides and Hydrophobia*

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The most celebrated of all the works of the ancients on materia medica is the *Peri Hules Iatrikes* (concerning materia medica) of Dioscorides.

Dioscorides (1) was born in Anazarbus in Cilicia and flourished apparently about the time of Nero in the second and third quarters of the First Century, A. D.

His work is substantially a herbal though there are a number of mineral and animal substances also mentioned and described; and it more than held its own for sixteen or seventeen hundred years. It cannot, indeed, boast of scientific or logical arrangement, the description given of plants when any description is given—for in many cases we have only the name or names—is generally defective, and sometimes contradictory or unintelligible. He falls far short in many respects of Theophrastus (2) of Erasos four centuries before; he was, however, writing a practical not a scientific treatise. For his times, it was reasonably exhaustive, describing, as it does, seven hundred plants, more than ninety minerals and one hundred and sixty-eight animal substances, not far from one thousand in all.

It has been made a matter of reproach that he ascribes too many virtues to one and the same substance; but that is the case with practically all herbalists—for example in the well known herbal of Nicholas Culpeper (3), the author frequently fills a quarto page with his enthusiastic enumeration of the virtues of an English plant.

At the present time the chief value of Dioscorides' elaborate treatise is historical as showing the kind and extent of materia medica knowledge in his day. There are five books of undoubted general authenticity, although there are probably a number of interpolations in them. A sixth book on Alexipharmics and a seventh on Theriaca (4) are added. The authenticity of these has been doubted but without much real ground for the doubt.

Of course the work was translated into Latin and printed—the best edition is said to be that of Sprengel in Kühn's Collection of Greek Physicians, Leipsic, 1829; but I have found an earlier edition wholly satisfactory, and, for an amateur at least, more interesting. The celebrated Joannes Ruellius (5) translated it into Latin and it was published in quarto form at Frankfort in 1543, under the editorship of Dr. Walter H. Ryff (6) who added many valuable and illuminating notes, the Scholia of Joannes Lonicerus (7) with Greek, Latin, Hebrew and German nomenclature being added—this is the edition I use.

The fact that Dioscorides attributes to one and the same plant many virtues has already been mentioned: this, of course, implies that for the same therapeutic effect any one of many plants is effective. For example, I have counted about seventy-five plants which are relied on to counteract the bites of venomous serpents, while there are literally hundreds of diuretics, laxatives and emmenagogues, cholagogues, vulneraries and styptics.

Some of the effects are at least interesting, e. g., if anyone chews anchusa and spits in a serpent's mouth, he will kill it; if one wear an amulet of spina alba, it is said it will drive away serpents—so will calaminth, peucedanum, cedrus and the stone gagates; while the juice of old elms mixed with anise and wine and rubbed on the threshold will keep them out, and "they say" lychnis placed near them at once renders them torpid and inert; "they say," too, that serpents cannot harm deer which eat elaphobos.

Witchcraft is kept away by branches of the rhamnus placed in the windows and the plague by sativa angelica; if children eat, roasted, "the mice that run around the house," it will cure slobbering—"if you dissect young swallows as soon as they are hatched, in a waxing moon, you will find in their belly two stones, one particolored, the other white—these not being allowed to touch the ground but tied in calf's hide or deerskin to the arm or neck will be of much assistance to epileptics and will often cure them at once." That is not the only wonderful thing about young swallows, for "some say that if young swallows are blinded the mothers will restore their sight by the application of the herb chelidonium." "Theophrastus says that if anyone puts pumice stone into a pot of boiling wine, the heat is at once abated." "The little worm from the heads of dipsacum or Venus' lip tied in a little sac to neck or arm is helpful as a remedy in quartan fevers," and "they say, that if anyone carries a polemonia root, he will not be bitten by a serpent, or, if he is, it will do him no harm"—this will make it less wonderful that the plant if chewed relieves toothache. In these post-O. T. A. and posteighteenth amendment days, it may be well to know that if the seats be sprinkled with water from the sacra herba, "banquets become more joyous."

It is well known that "medical men use mandragora when there is need of knife or cautery;" but it is not so well known that there is so much poison in the taxus of southern France (gallia narbonensis) that it injures and very often kills those who sleep under it—or *phyteuma aut leontopodium ad amatoria convenire et prodesse.* "Take a hair of the dog that bit you"—"the mus auraneus dissected and applied extracts the poison of its own bite" and canine urine helps in dog bites; and if psyllium, fleawort, is growing in a house, fleas cannot remain (8).

There are enumerated seventeen plants good for the toothache and eighteen for hydrophobia.

Hydrophobia which is the subject of this paper, Dioscorides treats of at length in his sixth book, of which Chapter XXXV, *Signa rabiosi canis & demorsorum ab eo,* I here translate as literally as the idioms of the two languages permit.

*Read before the University of Toronto Medical Society.

CHAPTER XXXV

SYMPTOMS OF THE RABID DOG AND OF THOSE BITTEN BY HIM

We have begun with the bite of a rabid dog because that animal is usually domestic and is more frequently attacked by and dies of rabies: consequently it is difficult to avoid it, and so there is great danger for man unless he uses many precautions.

The dog is generally carried into rabies by very great heat—although sometimes as many receive it through cold weather. The rabid animal avoids drink and food, much frothy phlegm (9) flows from nostrils and mouth, he looks savage and more gloomy than usual, he everywhere attacks every living creature without barking and bites all whether man or beast, familiar or strange. There follows no immediate injury except the pain from the wound; but later on, that disease which from fear of water is called by the Greek word "hydrophobia" appears.

It begins with tension of the nerves (10), rubor of the whole body particularly of the face, accompanied by perspiration and a sort of languor; some avoid the glare of day, others without any pain find difficulty in drinking. There are some, too, who bark like a dog and bite those they meet, thereby affecting them with the like disease. Of all who have had this disease, we have never seen a single individual escape death. We have, indeed, read of one here and there who escaped—at all events, Eudemus (11) asserts that a certain man survived. Some say that Themiso (12) being bitten was attacked by this disease and escaped; but others say that he was professionally attending a friend who had hydrophobia and that through the sympathetic concord of their natures he himself contracted a like affection; but afterwards after much suffering, he survived. This is a most malignant disease from which before they were attacked by it, we have saved many and we have known of many who have been saved by other physicians.

Then follows:

CHAPTER XXXVI

REMEDIA DEMORSORUM A CANE RABIOSO

Treatment of those bitten by a rabid dog.

There are two methods of treatment, one, general to be used in all bites of poisonous animals, the other, particular, and especially for those who are bitten by mad dogs; this for some is of the utmost value, but for others useless, especially for those bitten a long time before.

We shall first explain this latter treatment and then go rapidly through the general method.

It is necessary, then, to cremate river crabs (13) in branches of the white vine and, triturating the ash as fine as possible, keep it on hand, and also keep on hand gentian root, powdered and sifted; then whenever anyone is bitten by a mad dog, let two spoonfuls of the crabshell ash and one of the gentian be put in four cupfuls of pure wine and drunk like gruel four times a day.

This is the treatment to be followed if the patient has just been bitten; but if two or three days have elapsed from the bite we recommend three times the weight in addition.

This is the best treatment for those bitten by rabid dogs; it is sufficient alone in most cases and may be employed with confidence. But that we may protect the rest against imminent peril, there is no reason why the other methods should not be employed. And it would be far better for a patient even if he had confidence in the one, to suffer the excruciating pain of medicaments rather than to run into danger through neglect and indifference.

In the case of those bitten by a rabid dog, larger wounds are not so much to be feared as the smaller and those which are like small ulcers of the skin, as the blood coming copiously from a larger wound can carry with it some of the poisonous fluid, which does not happen in the smaller wound. In smaller wounds, it is necessary to draw back the surrounding flesh, to pare the lips with a sharp scalpel and seizing the flesh with hamulus or vulsella (14), to amputate it. In every case, the parts around the wound are to be scarified, so that there may be a more copious flow of the blood and thus prevent the poison insinuating itself into the members. Cupping assists in this treatment as thereby the power of the poison is drawn out. Around the poisonous wound, cauterization is the speediest help because as fire is more effective in its powers than all else, at the same time that it dominates the virus by its force and the pain goes no deeper than the iron, at that same time the part which has felt the fire furnishes no ordinary foundation for future treatment, the ulceration continuing to drip for a longer time. From the time that crusts begin to form, care must be taken lest the lips of the ulcer close and form a cicatrix; and if possible the ulcerations and foul wounds threatening inflammation should be kept off for a long and definite time.

The best topical application for these is a salsamentum (15) and ground field garlic and onion and its juice particularly what is called Cyrenian or Median or Parthian onion; wheat ground or unground is to be applied if the wounds gape by deep effusion.....

If, as often happens, cicatrices close before the time set, they do harm and require an operation; for it is proper to open them and pare the flesh around with a scalpel or apply the actual cautery again. When the time set has passed, the wound is to be brought to a cicatrix and the surrounding parts treated with a plaster of salt and not long after with a sinapism.

CHAPTER XXXVII

RATIO UICTUS IN MORSU RABIOSI CANIS

In the following Chapter XXXVII, *Ratio uictus in morsu rabiosi canis,* after recommending wine, raisin wine and milk for ordinary drink, onions, garlic and leeks as food, theriaca mithridate (16) or mixed with eupatorium and aromatics as medicine, the author continues:

It is well to know that fear of water does not set in at any fixed and definite time; for the most part, in those who neglect to take proper treatment, the attack is deferred to the fortieth day, some are attacked even after half a year; in one case which was brought to our knowledge, the fear of water appeared after a year—they say that some have been so attacked after seven years (17).

We have already given the treatment in the early stages. If the remedies we have referred to are not

applied, it is not worth while to pare the wound with the scalpel or to try cauterization for they cannot draw out what has now made its way in—there is no occasion, no use, in employing such treatment for in vain would the body be subjected to pain.

Another method of treatment presents itself—purging furnishes a great help since by powerful purgatives the habit of the body is wholly changed—the hiera which contains colocynth (18) and curdled milk both effects purging and also can master the poison. And food, reasonably pure wine, by which the force of the venom is much blunted, should be taken every day. Moreover, perspiration is to be forced before and even after meals and dropacisms (19) and sinapisms applied alternately over the whole body. But by far the most efficacious medicine is recognized to be hellebore which can be used with confidence not now and again only but very frequently before the fortieth day and even after that time. This remedy is said to have such power that those who have already begun to experience fear of water, if they take hellebore as soon as they feel the onset of the disease, at once are saved. No man can ever save those who are actually seized.

In the Scholium to this chapter it is pointed out that no less an authority than Galen himself (20) gives a perfectly satisfactory treatment for hydrophobia—he should not, however, receive full credit for it as he learned it from his fellow citizen and preceptor, Aeschrion (21).

Galen says: Gather river crabs in the summer time after the rising of the Dogstar, when the sun is entering the constellation Leo on the eighteenth day of the moon: bake them alive in a crucible of copper until they are so far calcined as to be easily comminuted and ground to powder. Of this powder let the patient take one spoonful a day in water if he begin immediately after the bite or two spoonfuls if he does not begin till some days after—this to continue for forty days.

Or mix ten parts of this crab powder with five of gentian and one of olibanum and give one spoonful per day to the patient in water. Apply to the wound, the following prescription:

℞ Picis Brutiæ	lb. j
Opoponacis	℥ iij
Aceti Acerrimi	Coch. ij.

Galen says that no man who made use of these medicaments had ever died. Paulus Aegineta (22) warns physicians not to let the wound heal too soon—some by treating the wound closed it prematurely when the hydrophobia did not speedily appear and that was the reason that although the fear of water did not appear at once, it came on afterwards. In most cases this symptom appears in about forty days but sometimes not till after six or even seven months.

No little attention was paid to the determination of the fact of rabies in the dog thought to be mad. Dioscorides does not furnish us with any pathognomonic indicia or any symptoms beyond what has already been set out: but later writers went much further and gave perfectly differentiating indicia. How to determine whether the dog that bit was rabid, Paulus Aegineta (22) shows very plainly and concisely—it was not, however, his own discovery, he took it from Oribasius (23). Here is the recipe. Carefully contused walnuts are to be applied to the wound for a day after the bite—then thrown to a cock or a hen. If it do not eat the nuts, starve it till it does; then, when it has eaten the nuts, if the dog was not rabid the bird will live, but if it was, the bird will die the next day.

Paulus thinks the fear of water in those suffering from hydrophobia is due to the immense dryness of their body which is antipathetic to what is wet: but some think this is due to their imagining that they see in the water the image of the dog which bit them.

Paulus adds that the persons here and there who have been cured of hydrophobia were not bitten by dogs but by other men: From this it may be understood that the poison of a mad dog is the very worst of all. Before they actually fell into fear of water, however, it is proved that many have been saved by treatment.

There were believed to be other prophylactic measures which might be taken. Dioscorides tells us that the liver of a dog affected with rabies, roasted and eaten by those he has bitten, is credited with saving them from hydrophobia—some, too, to prevent that fear of water, make use of the tooth called canine—taking this tooth from the dog which bit them and putting it in a little sack, they tie it on their arm as an amulet (24) (by the side of this, it is a mere trifle that an old liver long salted and taken in hydromel expels the secundæ). Galen does not agree as to the dog's liver—some, he says, using it lived but some died (25). In the treatment of the bite, Dioscorides gives a wide range. He advises the juice of lycium or pyxacantha taken as a potion with honey: a plaster of walnuts with onions, salt and honey applied to the abdomen: the flesh of the fish called mituli applied to the wound; a salt pickle of the fish called smarides or the salt sauce called garum from any fish: canine blood as a drink: canine urine with nitre topically applied: honey licked up or drunk: leaves of the plantago as a plaster: juice of leeks with honey drunk or applied: alyssum eaten as food: onions with honey and ground pepper as a lotion: the leaves of the cynoglossus with old hogs' lard (which by the way heal baldness as well as burns): leaves of the sambucus very tender and soft as a poultice (this also is good for burns): acida muria called by the Greeks, oxalme, injected into the wound hot and at once: Lemnian earth: nitre with asses' or hogs' fat and vinegar: ash of vine twigs as a wash with vinegar—I omit the medicines which are applicable to other bites than those of mad dogs specially (26). It is rather strange that Dioscorides does not make more of the alyssum which received its name from its supposed quality of heating or preventing canine madness—Galen is very strong that experience proved it equal to its name (27). It may fairly be said that if the assertions of Dioscorides and Galen as to the effect of their remedies were well founded, any one who died of hydrophobia had only himself to blame—but were they?

NOTES

1. The life of Pedanius Dioscorides is well written in Anthon's *Classical Dictionary*, Harper's, N. Y., 1871, pp. 448, 449; the author shows full appreciation of the work of Dioscorides and quotes largely from medical authorities. See also Bass: *History of Medicine*, Dr. Handerson's Edition, N. Y., 1889, p. 159, which places him A. D. 40-90, quite too early as I think.

2. Theophrastus of Erasus in the Island of Lesbos, born

382 B. C., a Peripatetic philosopher and teacher, the tutor of Erisistratus, the celebrated physician. His *Characters* is still well known. Of his many scientific works, the best is *Peri Aition Phutikon.* Of the Causes of Plants, a system of plant physiology. He wrote also on Law, Mineralogy, Metaphysics, etc. See Anthon, *op. cit.*, pp. 1231, 1232; Bass, *op. cit.*, p. 118.

3. Nicholas Culpeper's *English Physician and Complete Herbal*, first published in 1653, was frequently republished. A small 8 vo. edition of 1770 is useful; but the best edition is the sumptuous 4to of 1789, edited by the astrologer and Modern Freemason, Dr. E. Sibley. There are 413 plants described. For hydrophobia, he recommended allheal (heraclea), angelica, brawm, betony (this also against witchcraft), dwarf elder, eglantine, fig, garlic, hound's tongue, lungflower, mint nettles, pimpernel, moonwort, mad wort and a wonderful solar tincture. Culpeper (1616-1654) was an astrologer as well as a physician: the first edition of his famous book appeared in 1653; a new edition by Uriah Cole appeared in 1661: others in 1668, 1802 and 1803; the only edition of his complete works was edited by Dr. Gordon, and appeared in 1802. See 13 D. N. B., pp. 286, 287. Bass, *op. cit.*, p. 526.

4. Alexipharmics, medicines to prevent poisoning, prophylactics: theriaca—a medicine to cure poison, particularly that of beasts. But the words were often used indiscriminately.

5. Joannes Ruellius—Jean Ruelle (1474-1537), known to Bass, *op. cit.*, p. 435, and the *Bibliographia Britannica* as a Veterinary—*Veterinari Medicinæ Libri duo,* Paris, 1530; Basle, 1537.

6. Dr. Walter Herman Ryff (or Reiff), a physician and surgeon of Strassburg, about 1545, an eminent author of textbooks on anatomy and surgery and also brewing—the first anatomy in German. The present work shows much learning. See Bass, *op. cit.*, pp. 420, 429.

(*To be concluded*)

A Brief Summary of the Early Conceptions of Carcinosis

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I assume that it is clear to most historians of medicine that the writers comprised in the Hippocratic collection were perfectly conversant with the nature of cancer, but only one mention is made of this, namely, that Phætusa, of Abdera, housekeeper to Pytheas, died of it (1). Yet in the *De morbis mulierum* the remark is made that women of sullen, depressed and melancholic temperament, as well as those suffering from uterine suppressions, are the subjects in which cancer is liable to occur, and the material cause is supposed to be an atrabilious leaven causing fermentation of the humors as well as aberration of the menstrual blood. Cough and abdominal disturbances are also referred to as factors in the cause of cancer and when the morbid process is not congenital it does not develop before the age of puberty.

Next we come to Galen (2), Celsus (3), Aretios (4), and the majority of the writers of antiquity who mostly accept the same opinion. They wrote quite exact descriptions of the disease but these varied according to the type of case, so that they cannot be comprised under a single pathological heading. Their etiology was of course governed by bile and atrabile.

Galen remarks that cancerous processes are derived from a thick viscous humor, gradually increasing in amount, and as he invariably finds fault with the medical profession in general, he does not lose the opportunity to state that all this is frequently the mistakes of physicians who strongly constrict or cool erysipelas or inflammatory processes.

Celsus supposes that the cause of cancer resides in a morbid state of the liver or spleen and points out that it is more prone to develop in the upper parts of the body.

Lastly, let it be said that Paulus Ægineta, who flourished several centuries later, assumes that the origin of cancer is to be sought for in the atrabile, hence it is usually corrosive in type. The disease may occur anywhere in the body, but its favorite sites are the uterus and female breasts (5).

Some nine centuries after Paulus we come to Ambroise Paré, who again takes up the subject and regardless of this long lapse of time we find this great surgeon indulging in the same theories of corrosive and malignant humors. Let me quote his words: *"La cause antecédent du chancre provient d'une manière de vivre, produisant un sang épais, mélancolique et limoneux"* which rendered into modern English would read: "The etiological factor of cancer is to be found in the way of living (of the subject) which will produce a thick, atrabilious and turbid blood." And again he says: *"Tout chancre est quasi incurable ou trés-difficile à guérir ou que, de tout son genre, est une tres mauvaise maladie, qui est ladrerie particulière."* (Every case of cancer is practically incurable, or at least very difficult to cure, because all forms are bad and represent a peculiar type of leprosy.)

Dionis, a famous surgeon of the eighteenth century, whose work on operative surgery is one of the most advanced for the time it was written, supposed that the cause of cancer was a coagulating acid that could be separated from the fluids composing a viscous, muddy blood. In the first volume of the *Mémoires de l'Academie de Chirurgie* is to be found a paper by Faget on cancer of the breast; the writer states that in his opinion cancerous growths result from thickened lymph which becomes converted into a corrosive sanious fluid. Many other eminent practitioners of the epoch also regarded cancer as due to some disturbance of the lymphatic system. On the other hand, Hévin, a contemporary of Dionis, objected to these opinions on the ground that these morbid productions are generally slow in growth and he favors the supposition that the origin of malignant neoplasms is to be found in a peculiar disturbance of the vessels of the lymph nodes. Then Ledrau published his paper on cancer in which he says that the lymph is the cause, quite independently of traumata and the cessation of menstruation which are so frequently invoked in the etiology of this affection.

At a later date, Pelletan maintained that cancer resulted from a thickening or coagulation of the lymph which stagnated in the part involved, while Gendron, rejecting the acrid leaven of Hippocrates,

thought that the origin of cancer was a congestion of one or several glands which progressively became indurated and finally scirrhous.

One of the most extravagant theories in respect to the origin of cancer was put forward at this time by Crawford, who maintained that the disease was due to a gas derived from the liver, of the nature of sulphuretted hydrogen and a substance which he supposed to be ammonia. Hence cancer was quite similar to gangrene, or a putrefactive process.

The celebrated John Hunter even went so far as to explain the development of cancerous processes to a globular shaped worm which he called "cancerous hydatid," and the great pathologist, carried away by his enthusiasm, described three kinds, namely, aqueous or sanguineous, gelatinous and bloody. Burns contradicted Hunter's hypothesis and stated that in all the cancerous tissues submitted by him to careful examination he had never discovered a parasite.

The famous clinician Stahl attributed cancer to a certain type of acid or putrid corruption, while Helvetius supposed the process due to coagulation of a few drops of morbid humor collected in an irritated lymph node. In Lieutaud's interesting book, *Précis de la Médecine Pratique* (6), we find that this distinguished physician attributes cancer in women to a melancholic humor developing at about the age of forty-five to fifty, while some seventy-five years later Richerand upheld the theory of concrete matter circulating in the lymphatics and nodes. At about the same time Sir Charles Bell in his book on ulcers denied the existence of an acrid fluid circulating in the humors as the cause of malignant disease, maintaining the only factor in the production of cancer is external trauma which gives rise in these circumstances to the quite acrid matter of cancer.

So far we have been dealing with suppositions, usually fantastic, and served in no way to the advancement of our knowledge of the etiology of cancer. We will now enter upon another phase of hypotheses but this time founded on experimental researches, and the first observer to be mentioned is Ponteau who, in 1760, published his book entitled *Recherches sur le vice cancéreux* (7). He admits two principal factors in the production of cancer, an external and an internal. An example of the former is a blow upon the parts involved which results in rupture of the bloodvessels and ecchymosis. The collection of blood becomes fluidified and acrid irritating the nerve fibres bathed in it; this gives rise to a small tumor which gradually acquires hardness.

In his *Dissertatio de cancro,* published in 1774, Peyrilhe (8) denies the theory of a primary cancerous diathesis. According to his way of thinking there is a certain spontaneous movement which, when once arising in a glandular concretion, only ceases when the mass of extravasated humors has become transformed into a putrid, acrid and corrosive ichor. As late as the year 1832, Sabatier maintained that cancerous manifestations were frequently the result of milk stagnating in the breast or to traumata, but that more usually they were the effect of an internal disposition developing at the approach of the menopause. Already in 1787 Selle was unable to decide whether or not cancer was a purely local process or depended upon a peculiar virus preexisting in the humors of the organism.

I am unable to refrain from referring to Roux, of Paris, in some detail, because from the modern viewpoint he puts forward some propositions that are not to be disdained even in our enlightened days. I quote: "Cancer is invariably preceded by some organic change of which it constitutes a special manner of degeneration."

"Cancer, an always identical affection, invariably the same, is quite unknown in so far as its nature is concerned."

"Although cancer at its onset involves only a small portion of the tissues (parts) it nevertheless extends and in its progress involves many other and different parts (of the body) which are not ordinarily primarily affected by it."

At about the same time that these judicious remarks were made—we are referring to the early part of the last century—Bayle had expressed the idea that cancer was a primary local lesion of a peculiar nature, and that if, in the same subject, it was combined with other types of organic degeneration of the tissues. This was no proof of a transformation, but rather a mere coincidence. According to another eminent medical personage of the same epoch, namely Marc Antoine Petit, there were three etiological factors each of which gave rise to three kinds of cancer respectively, namely: 1, traumata, functional disturbances during nursing and irregular menstruation; 2, the menopause, and 3, scrofula, the last named being the most frequent cause.

I must not overlook a rather rare little book by Fearon (9), entitled *A Treatise on Cancer,* in which the author, following the teachings of Boerhaave, regarded inflammation of the glandular structures of the female breast as a frequent cause of malignant disease.

As to statistics, it may be interesting to note that Terrier (10) in *Observations sur le Cancer,* published in 1806, states that ten women are smitten to one male; that the nature of cancer is unknown; that it is a local affection only in principle and in many instances is a general process.

Briefly put, up to the year 1812, only two theories reigned in respect to the etiology of cancer: 1. Cancer is due to a morbid state of the humors; there exists a preexisting general infection—otherwise, a cancerous diathesis. 2. There is no specific virus circulating in the blood. Cancer is a purely local process in principle and does not give rise to a cancerous diathesis unless a suppurative process progressively becomes acrid.

Then Laënnec, Andral, Cruveilhier, Lebert and Velpeau showed that cancer was primarily a local process, and finally cell pathology appeared upon the scene with Virchow in Germany, and Charles Robin in France, and opened up the road to the modern conceptions of this formidable scourge of humanity.

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4. Aretios: De causa et signis morborum, lib. 1, can. 13.
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6. Lieutaud: *Précis de la médecine pratique,* 1761.
7. Ponteau: *Recherches sur le vice cancéreux.*
8. Peyrilhe: *Dissertatio de cancro,* 1774.
9. Fearon: *A Treatise on Cancer,* 1790.
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Editorial Articles

MALARIA AND GENERAL PARALYSIS

Some years ago, indeed so far back as 1887, Dr. Wagner-Jauregg, of Vienna, began to treat general paralysis by artificially induced fever. Erysipelas, tuberculin, dead streptococci and proteid were all tested on subjects of general paresis for a time. The theory is that if a patient's blood is heated to a certain point the germ of paresis is attenuated or destroyed. The experiments with typhoid germs and tuberculin were of only quite moderate success because these induced a fever which it was difficult to control. Wagner-Jauregg in 1917 substituted malaria and according to reports chiefly from Austria and Germany has met with encouraging success from this mode of treatment.

According to Dr. Alexander Pilcz, professor of psychiatry and neurology in the University of Vienna, who writes on the subject in the *Lancet,* January 6, 1923, the method of procedure is as follows: A patient is selected who suffers from tertian malaria, not tropical malaria, and who has not been treated with quinine. During an attack of fever two c. c. of blood are taken from the patient by venous puncture and injected beneath the skin of the paralytic patient's back. After one week or two weeks on the average the first attack takes place; the temperature rises to 40° C. and over. After some ten or twelve attacks the malaria is checked by quinine. During the first three or four days, 0.5 gm. quinine sulphate is given twice a day for three or four days and then once daily for two weeks; at the same time a course of neosalvarsan is begun, with intravenous injections once a week, commencing with 0.3 gm. and working up to 0.6 gm. Dr. Pilcz says that best results are given by cases with the maniacal affections and by those of simple demency. Generally remission does not immediately follow treatment; it develops gradually, finally becoming permanent.

The method may be employed not only in cases of general paralysis but also in tabes and in other forms of neurosyphilis; in disseminated sclerosis also, it is stated that good results have been obtained. Further, it is asserted that this treatment should be applied not only when general paralysis is manifest but also much earlier in all cases of secondary syphilis.

Dr. Gerstman has written a book which has been published recently in which he asserts that this method has been a conspicuous success and cites some hundreds of cases in which recovery, partial or complete, has resulted from the treatment. In the Verdun Hospital for the Insane near Montreal the same treatment is said to have been followed with success a short time ago. But while in countries other than Austria and Germany the treatment has been applied only tentatively and on a comparatively few subjects, in Austria and Germany treatment has been done on a large scale and, as said before, it is affirmed with great success. Of course, time is the sole proof of the permanency of the cure. On the other hand, many of the patients treated in Austria and Germany have been free from their former disabling physical and mental symptoms for a considerable time, so that even if such results are obtained, it would seem that a trial of the treatment is well worth while.

MORPHOLOGY IN RELATION TO RHEUMATISM AND OTHER JOINT AFFECTIONS

Chronic, or socalled chronic diseases, perhaps occupy the attention of the medical profession more than any of the other ills of mankind, for the reason that they are more obvious and troublesome now than ever previously. Of all the maladies which afflict the human race none is more persistently prevalent, causes a greater amount of invalidity, and in certain respects is more deadly in its aftereffects than rheumatism. In the issue of the JOURNAL for May 20, 1925, Dr. F. G. Crookshank discusses the morphology of this affection in an original manner. His proposition in his own words is, that the parts and tissues most easily and most often affected by environmental and accidental stresses are those which, judged by the standards of comparative morphology, are distinctly "inferior," that is to say they are those which are the less "evolved" when compared with their like, and which exhibit reversionary characters or at any rate preserve embryonic or infantile features, and he carries this argument to its logical conclusions according to his point of view.

The less, indeed, any external part or member conforms to the Greek standard the more it approaches the standards of primitive races and the anthropoid apes; and the more likely this member and the organs correlated with it in function are to break down under strain.

In the case of rheumatism and the rheumatoid affections it is contended that the affected joints and correlated structures are so often markedly inferior, that there is justification in asserting a correlation between morphological inferiority and liability to certain joint affections. Rheumatism regarded from this aspect attacks those who from imperfect evolution of certain joints and correlated structures and who are

thereby not protected against such ouslaughts as are those whose evolution has reached a higher stage or a higher degree of perfection.

The hands, hips and lumbosacral spines, the parts attacked by arthritis, belong frequently to the Mongolian type or Mongol Orang type, more frequently than otherwise. However, the conformation and distinguishing characteristics of the hands, hips and lumbosacral spines have been dealt with at some length in Crookshank's book, *The Mongol in Our Midst,* published recently, and as said before his suggestion is that this delayed or imperfect development in a morphological sense has rendered the individual of this type more prone to arthritic seizures in those parts of the body where this imperfect development is most evident. Crookshank's article is highly stimulating and refreshing both from its unconventionality and from the instructive way in which his thesis is propounded. Also it may be said to have a distinctly practical bearing, as if it be allowed that this lack of development is a factor of importance in the causation of arthritis, it should be of value in diagnosis and treatment, especially of a preventive nature. In the course of the article attention is drawn to a point of rare interest, namely, that the French believe firmly that "chronic arthritics" possess what is termed the "arthritic diathesis." Moreover, Crookshank has the impression that those who suffer from acute rheumatism are persons in whom the "lacunar system," the lymphatic and serous complex, offers less resistance than is normal to certain infections. Confessedly, much has to be learned of rheumatism and allied affections, if such terms are permissible, and any ideas which tend to throw fresh light upon their obscure features. Crookshank's article is thus illuminating and possesses further the rare merit of not being tedious.

TUBERCULOSIS CURES

Are there cures for tuberculosis? The Sphalinger Semm and what is termed the sanocrysin or gold treatment of tuberculosis have been in the limelight recently. The Sphalinger treatment has many adherents in Great Britain and in Canada. It has been announced that Dr. Godfrey, the Minister for Labor and Health in Ontario, who has just returned from the International Labor Conference in Geneva, was so greatly impressed with the Sphalinger treatment that he intended to introduce the method into Ontario. As for the gold treatment, it is reported from London that Dr. Faber, of Copenhagen, informed the London National Association for the Prevention of Tuberculosis which met a short time ago, that seven months of tests of sanocrysin of forty-two cases of chronic pulmonary tuberculosis resulted in eight being clinically cured; seventeen others showed considerable improvement, nine were unimproved and six showed a tendency for the disease to spread.

Professor Cummins, of Cardiff, stated that six cases under his supervision showed strong evidence of reduction of bacilli under sanocrysin. Without exactly laying oneself open to the charge of being a "doubting Thomas" it may be remarked that there have been a very large number of reputed cures for tuberculosis, none of which have fulfilled the claims made for them. Indeed, several of them have done more harm than good by arousing false hopes and by inducing persons in an advanced stage of tuberculosis to take long journeys and to expend much money, with the result that they have died more quickly by far than they would have died otherwise. It is continually being reported that a cure for one or other disease has been discovered and it can be said that if one per cent. of these reports had proved to be true there would be many ways of curing all the diseases known.

It is known that if diphtheria antitoxin in the proper doses is given in time it is practically a cure. It is hoped that the scarlet fever antitoxin which is now on trial will be equally successful. As a matter of fact there are few definite cures. No doubt the proper and timely use of drugs has saved many lives. But such drugs assist Nature to tide over a certain period in order to give the body time to bring its own defensive powers into action. That is why drugs should be given only on the advice of the family physician. He knows the drug that should be used, when it should be used, and how much of it should be given.

It may be stated that there is no cure known for tuberculosis, that is no medicinal cure. At the present time successful treatment of pulmonary tuberculosis consists in early diagnosis and treatment which signifies rest, fresh air, plenty of sunshine and a sufficiency of suitable food. Advanced cases, in which the contagious element plays its part, should be segregated for the sake of the community at large.

Although it is absolutely just that the Sphalinger treatment and the gold treatment should be given fair and extended trials, because they are vouched for by medical men of reputation, it is not wise to refer to them as cures until the evidence in their favor is very much more convincing than it is at present. In this connection the recent experiments concerning the rôle of calcium in the causation of tuberculosis is interesting. French physicians some time ago contended that tuberculosis was characterized by decalcification on the excretion of an excessive quantity of calcium and that the rational treatment was to supply the system with calcium as far as was possible. At the present time these views are supported by other

investigators, notably by Dr. Boyd Orr of the Rowett Research Institute, Aberdeen, and appears to be a commonsense mode of treatment.

IODINE THERAPY

The value of the mineral salts and, perhaps, of iodine, in particular, is the outstanding feature of the most recent therapy. For some time vitamines held the field and the mineral salts were overshadowed. Matters are now on a more rational basis and while all due respect is paid to the vitamines, the other chemical elements of the human body are regarded with the consideration which is their due. For this more correct estimation of the mineral salts credit is chiefly owing to Dr. Orr, director of the Rowett Institute, Aberdeen. During the past few months discussion has been especially rife on the subject of goitre, which has been found to be very prevalent in this country as well as in other countries. Endemic or subthyroidal goitre is indeed widespread and negative evidence seems to have proved conclusively that it is brought about by a lack of iodine in the system. Knowledge of the endocrine glands and their exact functions is still in the early stages and perhaps the only one of these glands of which precise knowledge does exist is the thyroid. It is thought by some to be the director probably of the endocrine system, and if it gets out of order the other glands are apt to get out of gear and ill health is the consequence.

Instability of the thyroid gland manifests itself very frequently in the form of goitre both of a hypothyroidal and hyperthyroidal nature. As said before, it has been demonstrated by negative evidence that hypothyroidal goitre is owing to a deficiency of iodine in the system, because it has been proved that if in such cases iodine in proper doses be given that the thyroid will resume its functions and normal health will be the result. But Plummer in March, 1922, showed that iodine exerts beneficial effects in the treatment of exophthalmic goitre. Now Dr. Arnold S. Jackson, of Madison, Wisconsin, in the *Lancet*, April 11, 1925, corroborates and supplements the findings of Plummer by stating that in a series of sixty-three cases operated upon in his clinic between October, 1922, and October, 1924, there were neither surgical mortalities nor medical deaths, and these results were because iodine was used orally. Not only has Plummer's discovery revolutionized our ideas concerning the effect of iodine in exophthalmic goitre but has provided a means of combating successfully the dreaded clinical postoperative hyperthyroidism. It is not claimed that iodine cures hyperthyroidism but it is declared to have a most remarkable effect on the condition. Within forty-eight hours after its ingestion there is a marked abatement of all the symptoms. The nervous, vascular and digestive systems are all favorably influenced and there is an average reduction of plus nineteen per cent. in the basal metabolic rate. It appears then that simple goitre may be prevented and treated successfully by the administration of iodine and that exophthalmic goitre is benefited by a similar procedure. Consequently both hyperthyroidism and hypothyroidism seem to be amenable more or less to iodine therapy. Although there are no precise data upon which to lay down definite rules as to iodine therapy in these conditions, the outlook is encouraging and with greater experience more light will be thrown on the subject. The future for iodine medication is full of promise, as instability of the thyroid and, perhaps, hypothyroidism especially, is responsible for or a factor in the causation and development of many diseases.

Also it may be noted that iodine medication not infrequently fails because iodide of potassium and other iodine preparations are not tolerated by all persons and their prolonged use is liable to upset the digestion in many cases. However, it appears to have been proved conclusively that a sufficiency of iodine in the system is essential to good health and that when there is a deficiency this lack must be supplied.

THE NATIONAL BOARD OF HEALTH

The National Board of Health, which was in existence for a brief period during the latter part of the nineteenth century, writes James A. Tobey (*Nation's Health*, January, 1926) represents an almost forgotten incident in the history of public health in the United States. The immediate cause of the creation of the board was the disastrous epidemic of yellow fever, which swept over this country, apparently from Cuba, in 1878, and was the worst visitation of this kind for a century. Although the epidemic was most prevalent in the South, all parts of the country were severely attacked. It is estimated that one hundred thousand persons were stricken and that twenty thousand died. The monetary loss to the country has been estimated as from one hundred to two hundred millions of dollars. It cost New Orleans alone about ten million dollars. So great a popular calamity was it that President Hayes said in his annual message: "The fearful spread of this pestilence has awakened a very general public sentiment in favor of national sanitary administration, which shall not only quarantine but have the sanitary supervision of internal commerce in times of epidemic and hold an advisory relation to the state and municipal health authorities, with power to deal with whatever endangers the public health and which the municipal and state health authorities are unable to regulate."

The subject of a national quarantine had been advocated and debated for many years. As early as

1796 an act reative to quarantine had been passed. This was repealed in 1799 by a new law which recognized the authority of the several states over quarantine matters, and primarily a state function it remained, until April 29, 1878, when an act was passed by Congress which empowered the Surgeon General of the Marine Hospital Service, with the aid of customs officers, to impose and enforce maritime quarantine in cooperation with state and municipal officials. The passage of this law was directly influenced and brought about by the discovery through a study of conditions that of eighty-eight epidemics of yellow fever from 1683 to 1878, seventy-seven had been definitely proven to have been introduced from foreign countries through commerce. The National Board of Health was created about a year after this first quarantine law, by an act of March 3, 1879; on June 2nd of the same year a new law was passed placing the enforcement of national quarantine, still in cooperation with the states, upon the National Board of Health, which was authorized to promulgate necessary rules and regulations for the purpose. The board was also directed to obtain and publish sanitary information from foreign and domestic sources. Half a million dollars was appropriated for this work.

The board originally consisted of eleven members, seven appointed by the President, three medical officers from the army, navy and marine hospital service, and one representative from the office of the attorney general. James L. Cabell, LL.D., was elected president and acted in that capacity throughout the existence of the board, although some of the other members were changed. The National Academy of Science was directed to assist the board and scientific aid was also obtained from the American Public Health Association which had been founded in 1852 by Dr. Stephen Smith, and of which Professor Cabell was president.

The board undertook and in many cases completed during its rather brief existence a number of important investigations and sanitary surveys which are valuable contributions to medical and sanitary science.

In the course of time, however, some of the southern states, led by Louisiana, made trouble on the basis that they did not consider quarantine to be national in scope. Interference with commerce in the interests of health, no matter how humanitarian or important, interfered with commercial profits, and the trouble grew. The National Board was blamed for instigating a quarantine against New Orleans, and was charged with extravagance and usurpation of power. Also, the emergency conditions due to epidemics were over and Congress began to lose interest. Although delegates from twelve of the states, including the trouble maker, Louisiana, sent an expression of confidence in the board's work to President Arthur, interest in political circles continued to wane, and the National Board of Health ceased to exist on February 15, 1893, when an act was passed granting additional powers and imposing additional duties on the Marine Hospital Service. This was the first real national quarantine law. An attempt was made in 1899 to reestablish the board but in vain.

The National Board of Health was a successful venture while it lasted, although its career was somewhat turbulent, due to the controversies instigated by certain states for commercial reasons. It forms a worth while precedent for future action.

ACUTE APPENDICITIS

In Great Britain appendicitis is a common complaint and apparently is increasing. At a meeting of the Liverpool Medical Institution held on March 18th last Mr. G. C. E. Simpson read a paper on acute appendicitis in which some extremely interesting and somewhat startling facts were brought out. He said in part, that from the Registrar-General's reports checked by his knowledge of a small town where he had been able to trace most of the cases of acute appendicitis during the past five years he had come to the conclusion that the incidence of the disease was about one case per one thousand of population per annum, with a mortality in cases treated surgically of about six per cent. According to Osler's *Medicine* 1901 cases treated on medical lines had a mortality of fourteen per cent. He suggested that this would be reduced to less than half if the general peritonitis and abscess cases were submitted to immediate operation and the rest treated on medical lines. In this opinion, with which opinion it may be said that many surgeons here and elsewhere are in agreement, he thought that the careful choice of the time of operation in later cases would give a reduction, apart from the reduction to be effected by earlier diagnosis.

As for himself he operated at once in all cases seen in the first two days, in cases seen later which were advancing, and, as a rule, on all children. He used the Ochsner method in doubtful or subsiding cases seen on the third day or later, and operated when they had subsided. These cases, however, must be kept under close observation, and intervention undertaken at once if signs of progression were seen. On these lines Mr. Simpson's results had been very successful. His mortality in the Northern Hospital during the past five years was only 2.5 per cent.

He concluded as the outcome of his experience and observations that the mortality of acute appendicitis could be lowered by judicious choice of the time to operate in cases not seen before the third day, but emphasized the need for the cases to be under strict observation and regulation. He considered that this would lead to all suspect cases of appendicitis being kept in the Fowler position and on water only while waiting the advent of the surgeon and that this and the opportunities given to students to see more of the symptoms of appendicitis through these patients being detained in the wards, would more than neutralize the ill effects from some doctors carrying out the treatment in the wrong cases and under wrong conditions.

Fig. 1.—Montefiore Hospital, showing Nurses' Home at extreme left.

Montefiore Hospital for Chronic Diseases

JACOB GOODFRIEND, Assistant General Superintendent
New York, N. Y.

Montefiore Hospital was established in 1884 under the name of Montefiore Home for Chronic Invalids. Its facilities for the proper care and treatment of chronic diseases were rather limited and the institution therefore functioned more or less as a "home," giving custodial care to those afflicted with incurable ailments. There has been a gradual change in the character of the institution to that of a hospital. In order to correct the impression that has prevailed in many quarters that the institution was chiefly a home for aged people, when as a matter of fact it is a hospital in every sense of the word, the name was changed more appropriately to describe the nature of the work we are doing.

The medical equipment covers every phase of diagnosis and treatment. Particularly noteworthy are the x ray, physiotherapy, dietetic, occupation therapy and medical photographic departments.

Patients requiring medical study for diagnosis or treatment, or skilled prolonged nursing care, are admitted to the main hospital buildings. Many are rehabilitated and discharged to their homes. Others, who require custodial care only and who are homeless, are transferred to the Schiff or custodial pavilion, which is designed particularly for their care.

There is a completely equipped research laboratory devoting its energies to the study of chronic diseases, as well as fully equipped cancer research and neuropathological laboratories.

The social service department gives assistance to patients and their dependents in their social and economic problems.

The first building occupied by the Montefiore Hospital was situated on the upper East Side of New York City and had accommodations for thirty patients. The need for expansion, however, manifested itself during the early years of its existence and its progress, as can be seen from the following table, was very rapid:

GROWTH OF BED CAPACITY

Hospital Building		*Hospital Building and Branch at Bedford Hills*	
1884	30 beds	1905	441 beds
1890	140 beds	1910	472 beds
1895	270 beds	1915	700 beds
1900	350 beds	1926	806 beds

The block plan and the following description indicate that the buildings are substantially of the pavilion system, in so far as the different buildings are separate and isolated for all practical purposes, but connected by covered corridors.

This group of buildings comprises the administration building, which contains the offices, living rooms of the medical staff, school room for the children, and meeting rooms in one half, and a private pavilion with accommodations for thirty patients in the other, on the ground floor of which are classroom, demonstration room and laboratory of the Nurses' Training School. The service building contains the power plant, kitchen, dining rooms, auditorium, receiving department, laundry and linen room. The synagogue has a seating capacity of three hundred, the basement of which is occupied as a general storeroom. The dormitories, with the workshops in the basement, can house one hundred and sixty employees.

PAVILIONS

The patients occupy four pavilions. The central pavilion is the largest and consists of four stories and basement. The enclosed roof is used as a medical photographic department. The east and west

pavilions consist of three stories and basement each. The south pavilion is a structure 340 feet in length with only two stories and basement. All buildings are connected by covered corridors. The wards units are sixty beds in the central pavilion, thirty beds in the east and west pavilions, and thirty-five beds in the south pavilion.

The central pavilion—An occupational work room

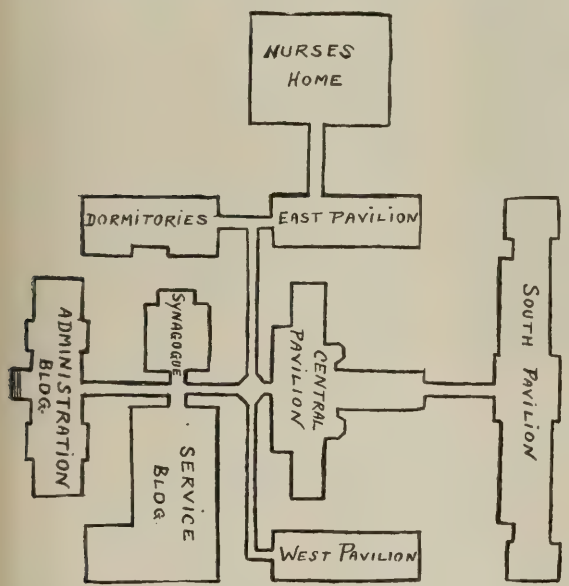

FIG. 2.—Block plan showing corridors connecting all buildings.

in charge of an efficient staff of instructors is provided for those of the inmates who can do a certain amount of therapeutic work; the number of hours of work is prescribed by the house staff. The occupation department and children's playroom are on the level of the cement walks and gardens, so that wheelchair patients and those who walk on crutches can enjoy the use of the grounds. The drug department, tailor and barber shops and patients' cooperative store (canteen) are also situated in the basement of the central pavilion.

The west or medical pavilion.—This pavilion has two floors for patients, with an elaborate electrocardiograph department on the second floor. The morgue, autopsy and funeral rooms and x ray department are in the basement. On the third floor the research laboratories are located, the roof being used for animal quarters.

The east pavilion.—There are two floors for surgical and orthopedic cases in this pavilion. In the basement are rooms for physiotherapy, comprising hydrotherapy, electrotherapy, baking apparatus and mechanotherapy (Zander machines). Two large operating rooms, dental department, and nurses' infirmary are on the third floor.

The south pavilion.—The more advanced cases of pulmonary tuberculosis are accommodated here; those in the incipient and second stages are sent to our sanatorium at Bedford Hills, N. Y., now caring for 220 such patients. Balconies extend over the entire south end of the building, and all rooms, including the recreation rooms, open out to these balconies, so that all beds can be moved out. The upper porch recedes about three feet so as not to obstruct the light in the rooms of the lower floor. Separate lawns are reserved for the tuberculosis patients.

The basement level of the buildings is used for deliveries, laundry trucks, etc. The main floor is intended for passenger traffic, i. e., for patients and employees; the next floor represents a roof garden, guarded by a railing, and being an open air connection to all the buildings, it serves the purpose of a fire escape.

The entire group of buildings is surrounded by a park sixty feet wide.

The hospital conducts a Training School for Nurses in which forty-five pupils are enrolled. The Nurses' Home accommodates seventy-five nurses.

The special diet kitchen prepares over one hundred diets for diabetics and other patients who require special foods.

The distinguishing feature of chronic disease, as the name implies, is its long duration. Most of our patients require months of treatment to achieve rehabilitation. Some are left nonprogressively disabled and still others become worse, the illness lasting many months and even years.

Four clinical divisions are maintained as follows:

	Beds Available		*Children*		
	Male	*Female*	*Boys*	*Girls*	*Totals*
Medical	61	60	11	13	145
Neurological ...	75	72	7	4	158
Tuberculosis (advanced stage)..	97	53	0	0	150
Surgical (including cancer and orthopedic) ...	65	62	7	4	138
	298	247	25	21	591

Chronic patients are here grouped in three classes according to the demands they make on the resources of the institution, as follows: Class A: Those in need

FIG. 3.—The first Montefiore Hospital, 1884, corner Eighty-fourth Street and Avenue A.

of active medical care for diagnosis and treatment. Class B: Those who need nursing care only. Class C: Those who are in need of custodial care only.

One can readily understand that patients do not remain in any one class indefinitely. A patient may be placed in Class A on admission, but show sufficient improvement in the course of a few months to be placed in Class C; while on the other hand, a patient in Class C (custodial) may become acutely

Fig. 4.—Occupation Therapy Department. Weaving Room.

ill which places him in Class A. There is provision in a separate building (Schiff pavilion) for sixty Class C patients who require no active medical care or treatment, but whose economic condition is such that they cannot be returned to their homes.

The Institution conducts four out patient clinics for those who do not require hospitalization, or patients discharged, whose progress it is desirable to observe for a time, namely,* cancer, cardiac, physiotherapy and diabetic.

The scientific application of water in the treatment of chronic disease, known as hydrotherapy, was first substantially recognized in this country by Dr. Simon Baruch, one of the first presidents of the medical board of the hospital. In 1893 this hospital was the only public institution in the country which possessed a complete outfit for hydrotherapy. We may justly claim for the institution the position of pioneer in this important and fruitful field. The hospital has kept pace with the rapid strides made, both in this country and abroad, in all branches of physiotherapy, with the result that we can today still regard with pride and satisfaction the fact that our equipment is as complete as any connected with a public institution in the country.

ACTIVITIES OF INSTITUTION

The activities of the institution are summarized in the following abstract from the statistical reports for 1925:

	Excluding private pavilion
Total number of patients treated in the Institution since its inception, October 26, 1884	30,000
Number of patients treated during the year	1,510
Patients discharged during the year	560
Deaths during the year	389
Days of care for the year.	205,067
Average length of stay:	
Tuberculous patients	95 days
Other chronic patients.	144 days
Schiff pavilion (custodial patients)	266 days
LABORATORY:	
Autopsies	85
Pathological examinations.	288
Chemical examinations	2,749
Bacteriological examinations	322
Serological examination	1,621
Basal metabolism	117
OPERATING ROOM:	
Major operations	72
Minor operations	282
Plaster casts	44
Anesthetics	61
Salvarsans	207
Nose and throat cases treated	484
Eye cases treated	449
X RAY DEPARTMENT:	
Hospital and clinic patients	2,271
RADIOTHERAPY DEPARTMENT:	
X ray treatments	1,629
Hospital and clinic Radium treatments	12
PHYSIOTHERAPY DEPARTMENT:	
Hydrotherapy treatments	5,029
Massages	7,953
Bakings	4,279
Electrotherapy treatments.	8,457
Mechanotherapy treatments	8,243
DENTAL DEPARTMENT:	
Patients treated (Comprising prophylactics, plates, fillings, extractions, cavity preparations and x rays)	2,892
ELECTROCARDIOGRAMS:	656
PHARMACY:	
Ward prescriptions	43,589
Clinic prescriptions	1,139
Employees' prescriptions	765
DAILY AVERAGE SCHOOL ATTENDANCE ....children	27
OCCUPATION THERAPY:	
Average daily number of patients employed in shop	29
Average daily number of patients employed in ward	60
DIETETIC DEPARTMENT:	
Average number of special diets a day	129
SOCIAL SERVICE DEPARTMENT:	
Visits to ward patients	2,980
Home visits	1,858
Other visits	854
PHOTOGRAPHIC DEPARTMENT:	
Plates	431
Prints	1,190
Lantern slides	151
Microphotographs	464

Fig. 5.—Physiotherapy Department. Mechanotherapy equipment.

News Items.

Boylston Prize.—It has been decided that no award of the Boylston prize of the Harvard University Medical School will be made this year.

Civil Service.—An assistant statistician is desired in the United States Public Health Service, entrance salary twenty-four hundred dollars. Applications should be sent to the Civil Service Commission by June 8th.

Dr. Morton Honored.—A tree has been planted in Honor Grove, Central Park, New York, and dedicated in the name of Dr. Rosalie Slaughter Morton, of New York, in recognition of national and international patriotic and humanitarian services.

Cutter Lectures.—Sir Arthur Newsholme of England delivered the Cutter lectures on preventive medicine at the Harvard Medical School. His subjects were Present Position of the Tuberculosis Problem and Remaining Problems in Maternity and Child Welfare.

Indian Medical Service Reorganized.—The Indian medical service has been reorganized with Dr. Marshall C. Guthrie, of the United States Public Health Service, appointed chief medical director. Four districts have been established, each with a medical director in charge.

Radium Spring.—Bad Brambach in Saxony, known as the Radium Spa because its waters have the highest radioactivity of any spring known today (more than two thousand Maché units), has discovered three new radiomineral springs that mean an additional supply of three hundred cubicmetres of mineral water a day with a radioactivity of more than five hundred Maché units. In order to cope with the yearly increase of visitors, a new Kurhaus, colonnades, and bathhouses have been erected, and new tennis courts for sportlovers have been laid out.

Dr. Davison Honored.—A dinner was recently given in Chicago in honor of Dr. Charles Davison, who has been appointed attending surgeon emeritus at the Cook County Hospital, after thirty-two years of continuous service on its staff. Dr. Davison is also emeritus professor of surgery of the Illinois College of Medicine. A portrait bust of him by Lorado Taft was presented to the College at the time of the dinner. The president of the University of Illinois, Dr. David J. Davis, dean of the College of Medicine, and Dr. Edward L. Heintz of Chicago were among the speakers.

Bureau of Medical Research.—A bill to establish a bureau of medical research in the department of the interior has been introduced by Representative Woodruff of Michigan. Its purpose would be the investigation of physiological processes, the devising of means for controlling bodily processes, and the determining of physical, chemical, and biological properties of materials when this would be useful medical knowledge. One hundred acres of ground near Washington would be bought, buildings erected at a cost of not more than one million dollars, a director appointed by the President at a salary of $15,000, an assistant at $10,000, and such other personnel provided as would be necessary.

Guggenheim Foundation.—Among the awards of the John Simon Guggenheim Memorial Foundation, established a year ago with a three million dollar fund by Mr. and Mrs. Simon Guggenheim, in memory of their son, is one of Dr. Harold Myers Marvin, assistant professor of medicine of Yale University. Dr. Marvin is appointed for research in the field of cardiovascular physiology in Sir Thomas Lewis's Laboratory at the University College Hospital, London, England.

Personal.—Dr. Charles C. Williamson, formerly director of the information service of the Rockefeller Foundation, is the new director of the libraries of Columbia Univeristy.

Dr. Jacob Sobel has received an appointment as attending pediatrist at the Hospital for Joint Diseases, New York.

Dr. William Howard Godsick and Dr. Irving Smiley have been appointed assistant attending gynecologists and obstetricians to the Lincoln Hospital, New York.

Dr. Benjamin Philip Watson, of the University of Edinburgh, has been appointed professor of midwifery and diseases of women in the College of Physicians and Surgeons, New York, and director of the Sloane Hospital for Women.

Dr. Abraham Kosseff has been appointed superintendent of Beth Moses Hospital, Brooklyn; he was formerly chief physician at Sing Sing.

Dr. William Calhoun Stirling, Jr., has received an appointment as associate professor of genitourinary surgery at Georgetown University Medical School, Washington, D. C.

Lieut. Col. Charles F. Craig, of the United States Army Medical Corps, has been appointed director of laboratories and of the department of clinical pathology and preventive medicine at the Army Medical School.

Dr. John A. Waggener, of Humboldt, Nebraska, has recently celebrated his fiftieth anniversary in the practice of medicine.

Dr. Myron A. Zacks has received an appointment as chief of the department of otolaryngology at the Northwestern General Hospital of Philadelphia.

Dr. Knud Faber, professor of internal medicine of the University of Copenhagen, recently spoke on Intestinal Origin of Pernicious Anemia, before the Harvard Medical School.

Dr. George A. Ulrich of Philadelphia has been appointed chief visiting obstetrician to Northwestern General Hospital.

Dr. Emanuel Libman of New York recently delivered two courses of lectures at the U. S. Veterans' Bureau Hospital at Oteen, North Carolina.

Dr. Thomas H. Haines has resigned as director of the division on mental deficiency of the National Committee for Mental Hygiene, in order to engage in private practice.

Dr. Henry F. Bean of Portsmouth, Ohio, has recently celebrated his fiftieth year in the practice of medicine.

Dr. Anthony J. Lanza, director of the National Health Council, has resigned to do group insurance and industrial hygiene work with the Metropolitan Life Insurance Company.

Gifts and Bequests.—By the will of Ella A. Rogers the New York Hospital received $50,000; the Lincoln Hospital and Home, and the Servants of Relief for Incurable Cancer each received $20,000, and the Home for Incurables, New York, received $10,000.

The New York Eye and Ear Infirmary received $5,000 by the will of the late Dr. Dwight W. Hunter as a memorial to his son.

The Mount Sinai Hospital, New York, the United Hebrew Charities, the Hebrew Benevolent and Orphan Asylum, each received $5,000; the Montefiore Home for Chronic Invalids received $2,000, and the Home for Aged and Infirm Hebrews received $1,000 by the will of the late Albert Lorsch.

By the will of the late Margaret Elizabeth Griffith the Manhattan Eye, Ear and Throat Hospital received $5,000, and the residuary estate, on the death of his sister, estimated at more than $900,000, to the Presbyterian Hospital, New York.

The will of the late Mrs. Harriet J. Sayre, of Southampton, Long Island, provides $3,000 for the Southampton Hospital, and $2,000 for the Greenport Hospital.

By the will of the late Columbus B. Rogers, and that of his daughter, Ella, recently deceased, the New York Hospital, New York, received $50,000; the Lincoln Hospital, New York, $25,000; the Servants for the Relief of Incurable Cancer, $25,000; St. Mark's Hospital, New York, $20,000; the Home for Incurable, New York, $10,000.

Society News and Notes.

Coming meetings of interest at the American Museum of Natural History are as follows: New York Microscopical Society evening of Friday, May 7th; Section of Biology of the New York Academy of Sciences, Monday, May 10th; and New York Microscopical Society, Friday, May 21st.

* * *

The thirteenth annual convention of the Society of Industrial Engineers will be held at Philadelphia, June 16th to 18th, with the Bellevue-Stratford Hotel as headquarters.

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The fifth international Congress on Genetics will be held in Berlin in September, 1927. Prof. E. Bauer, president of the German Genetic Society, is chairman of the committee on arrangements.

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At the meeting of the Section of Anthropology and Psychology of the New York Academy of Sciences, held in conjunction with the American Ethnological Society at the American Museum of Natural History on April 26th, the audience enjoyed a view of the motion picture film, *Moana,* taken in Samoa by Robert J. Flaherty to show the daily life of the world's most beautiful and fast vanishing people, the Polynesians.

* * *

The meeting of the Chicago Dental Society, held in that city January 27th to 29th, was the largest in the history of the society. Although the organization is primarily local in character, contributors to the program came from Iowa, Massachusetts, Georgia, Minnesota, Colorado and Louisiana.

* * *

The American Society for the Prevention of Cruelty to Animals offers a cash prize of $1,000 to the inventor of a nonslipping horseshoe. The announcement says that out of six hundred devices examined not one fills the bill. "Sharpshoeing" and calks are excluded from the contest as impracticable and unsatisfactory devices for city streets.

* * *

At the latest meeting of the Yorkville Medical Society, a hospital relief fund was created to aid needy members. The committee in charge consists of the following physicians: Samuel J. Druskin, A. Schoen, M. F. Goldberger, Peter M. Bisher, Benjamin Rosenbluth, L. Glassman, Harris Weinstein, Braham H. Golden, William Grossman, Maurice Meltzer, and Charles N. Gelber, chairman.

* * *

The Flatbush Medical Society has elected the following officers for 1926: President, Dr. Howard V. Merrill; vice-president, Dr. William Steinbugler; treasurer, Dr. C. E. Rynd; secretary, Dr. H. H. Patrie; associate secretary, Dr. Joseph G. Terrence.

* * *

The Association of Volunteers in Social Service, *Better Times Magazine,* City Recreation Committee, Federation of Institutions Caring for Protestants, United Hospital Fund, and Welfare Council of New York City, have all established new headquarters at 151 Fifth Avenue, New York.

* * *

The next meeting of the Philadelphia County Medical Society, which will take place on May 12, 1926, will be devoted to tuberculosis. Dr. S. Adolphus Knopf of New York will speak on Mental and Physical Rest in Pulmonary Tuberculosis, and Dr. Howard Lilienthal of New York will discuss Surgical Methods in the Treatment of Pulmonary Phthisis.

* * *

At the last annual convention of the American Stomatological Association, held at the New York Academy of Medicine on April 6, 1926, the following officers were reelected for the year 1926-1927: president, Dr. Weston D. Bayley, Philadelphia; president elect, Dr. George R. Satterlee, New York; first vice-president, Dr. George W. Mackenzie, Philadelphia; second vice-president, Dr. Oliver T. Osborne, New Haven; treasurer, Dr. Robert H. Rose, New York; recorder, E. B. Sardisty, New York; general secretary, Dr. Alfred J. Asgis, New York.

* * *

Dr. P. F. Armand-Delille, president of Grancher Society of Paris, organized for the prevention of tuberculosis among children, describes the work of the organization in the current issue of the *World's Health.* The society is conducted on the principle that tuberculosis is not a hereditary, but a purely contagious disease.

* * *

Dr. James F. Cooper, of New York City, was a speaker at the annual meeting of the Arizona State Medical Association held recently at Globe. His subject was Contraceptive Technic.

The Utah Pharmaceutical Association has compiled a list of "ten common sense and generally accepted rules of what to do in case of poisoning for a list of forty potent drugs," on the theory that, when poison has been taken, we should not have to search laboriously through a book, but should have immediate knowledge available. The list compiled by the Utah society is compact and occupies a small enough space to be hung conveniently on the wall or kept in the medicine cabinet.

* * *

Health and Empire is the title of the new journal of the British Social Hygiene Council which began publication in March. The articles in the first number are by such authorities as C. L. Burt, M.A., D.Sc.; T. Percy Nunn, M.A., D.Sc.; C. J. Bond, C.M.G., F.R.C.S.; Leonard Findlay, M.D., F.R.C.P.S.; and G. D. Knox. The new magazine will be published by Constable & Co., Ltd.

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The Physicians' Square Club, composed of Master Masons, will celebrate its anniversary with a dance to be given at the Hotel Majestic, New York city, on the evening of May 6th, to which friends of members are invited.

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The New York Pharmaceutical Conference, Inc., with offices at 1440 Broadway, New York City, consists of twenty-one recently affiliated associations of pharmacists in New York and surrounding counties. The object of the affiliation is to ensure a closer relationship with the medical profession.

* * *

The American Board of Stomatology was created at the last annual convention of the American Stomatological Association in order to facilitate matters in maintaining a standard of fitness for the practice of stomatology as a medical specialty during the transitory period. An examination will be held by the American Board of Stomatology in New York City on Thursday, April 21, 1927, at the New York Academy of Medicine, during the annual convention. This examining board will issue certificates of proficiency to those who qualify under the established standard and they will be admitted to the annual Stomatological Medical Register, which will contain a list of those practitioners who have qualified in accordance with the standard set by the American Board of Stomatology.

* * *

On the evening of Wednesday, May 19th, a combined meeting will be held in Philadelphia of the Section of Otology and the Section of Laryngology and Rhinology of the New York Academy of Medicine, with the Philadelphia Section of Otology and Laryngology. The program will be announced later.

* * *

The League of Red Cross Societies is arranging a Pan-American Red Cross conference to be held in Washington, D. C., May 25th to June 5th. Each Red Cross Society has been invited to bring, in a consultative capacity, representatives of the public health organizations of their respective governments. There is a likelihood of the participation of other organizations doing international work, such as the International Red Cross Committee in Geneva, the League of Nations, the Rockefeller Foundation, and the International Council of Nurses.

* * *

The American Stomatological Association has received an official communication from the Federazione Stomatologica Italiana, with headquarters in Bologna, Italy, heartily endorsing the work of the former organization in the United States in its endeavor to bring the science of dentistry into line as a branch of general medicine, and praising the work done in education along these lines by the Postgraduate School of Stomatology, chartered by the University of the State of New York, and supervised by the American Stomatological Association.

* * *

The general subjects for the various sessions of the American Health Congress to be held at Atlantic City, May 17th-22d, have been announced by the chairman of the special program committee, Dr. Haven Emerson, as follows: May 17th, dance; May 18th, forum session, training of sanitarians; May 19th, clinic on publicity, immunization, nutrition; May 20th, teaching of hygiene, pollution of water by industrial wastes, milk; May 21st, ideal health administration for large and small cities, qualifications and duties of health officers. Joint sessions of various organizations tentatively scheduled will be on venereal disease control, graphic presentation of public health nursing, and diphtheria immunization. Sessions of the congress itself have been planned for the evening of the seventeenth, the afternoons of the eighteenth and of the twentieth, and the evening of the twenty-first.

* * *

May meetings at the New York Academy of Medicine will include the following: the stated meeting of the Academy will take place on Thursday evening, May 6th, at 8:30, when the address of the evening will be by Dr. Bernard Sachs on the Mental and Moral Training of the Normal Child; Duties of Physician, Parent and Teacher; A Critical Analysis of Modern Trends and Doctrines; on Friday evening, May 7th, the Section of Surgery will meet, with presentation of cases by Dr. John H. Morris, Dr. Alan D. Smith, Dr. John H. Garlock, Dr. William F. Honan, Dr. Bradley L. Coley and Dr. Ralph Colp; Dr. Harvey B. Stone, of Baltimore, will read a paper on Intestinal Obstruction: the Clinical Application of Experimental Studies, and Dr. Frederick T. Van Beuren, Jr., will speak on the Use of Enterostomy in Acute Ileus; the Section of Neurology and Psychiatry will meet on Tuesday evening, May 11th, with case presentations by Dr. Irving J. Sands and Dr. William V. Cone, and papers by Dr. H. G. Wolff on Gastroduodenal Ulcers and Autonomic Imbalance, and Dr. L. Pierce Clark, a Further Contribution to the Psychology of the Essential Epileptic; Thursday evening, May 6th, the Section of Pediatrics with presentation of cases from the Babies' Hospital, Bellevue Hospital, Mt. Sinai Hospital, Nursery and Childs' Hospital, Presbyterian Hospital, Roosevelt Hospital, St. Luke's Hospital, St. Mary's Hospital, Vanderbilt Clinic, and Dr. Rudolph D. Moffett.

Book Reviews

BLOOD PRESSURE

Blood Pressure. High and Low. By Chester Tilton Stone, M.D. New York: Allen Ross & Company, 1925.

While not invariably accurate, this little book gives a readable and useful review of the facts concerning normal and abnormal blood pressures that are of interest and value to the layman. The advice to patients with high blood pressure is simple and sensible, with emphasis on general temperance in eating, drinking and living, and the author rides no hobbies. The necessity for health examinations and medical supervision is emphasized. Few would agree, however, that seventy per cent. of hypertensives can be cured, and that excess of salt is the chief cause of high blood pressure.

OCCUPATIONAL THERAPY IN MENTAL DISORDERS

Occupational Therapy for the Mentally and Nervously Ill. By Louis J. Haas. Milwaukee: The Bruce Publishing Company, 1925. Pp. 409.

The book is divided into two sections, the first a general discussion of the subject, and the second a treatment of the individual crafts as to their benefits and disadvantages. The history of occupational therapy shows that for a long time it has been considered valuable in treating mental disorders. The Egyptians probably realized the curative value of occupation as early as 2000 B.C. David knew what results to expect when he played on his harp before Saul. Galen wrote in 172 A.D., "Employment is Nature's best physician, and is essential to human happiness."

The author's underlying theory is that it is the first and chief mission of a department of occupational therapy to create a modified normal atmosphere in which the patient is to pass at least some of his time. Another chief tenet is the intensive study of every individual, and his tastes and idiosyncrasies, for, the author writes, "being busy is not necessarily therapeutic." Choice of crafts and their relative value are next treated, and the discussion illustrated by a chart. To summarize some of the conclusions on this phase of the subject, basketry is considered as best adapted to serve the majority of patients, because it is varied, but is classified as third from the viewpoint of tool requirement and safety. Weaving is said to be the safest, but holds ninth position from the viewpoint of service, as do also circular and tennis net loom work and tennis racket stringing, although the former is third in safety and the latter tenth.

From his experience in various institutions and organizations as instructor in occupational therapy, the writer has evolved three questions, all of which must be answered affirmatively if the craft in question is to be continued. These are: 1. Is it interesting work? 2. Can it be so presented and controlled that the reaction thereto is therapeutic? 3. Can the patient perform four fifths of all the work involved?

Chapters follow discussing the plans and construction of buildings and the various shops for conducting occupational therapy; the selection of equipment, tools and materials and their care; department organization, records, relation to the hospital, standards of work, and the reception of patients. After his description and evaluation in the second part of the book of the various crafts, the author gives an account of his own apparatus devised for bedside occupation, and a discussion of its use in the wards.

Mr. Haas has been for more than a decade director of men's therapeutic occupations at Bloomingdale Hospital at White Plains, N. Y., and has taught in various other institutions in the East, so he is well qualified and equipped to discuss his subject, which he does with comprehensiveness and detail.

The style of the book is simple and clear, and its make up attractive.

GASTRIC FUNCTION

Gastric Function in Health and Disease. By John A. Ryle, M.D., F.R.C.P. Oxford Medical Publication. London and New York: Oxford University Press, 1926.

In this important monograph Ryle has computed his clinical experience and experimental studies regarding gastric function in health and disease. He has made extensive use of the fractional method for determining the secretory function and agrees in most respects with Rehfuss. In reference to the sensory function Ryle emphasizes that gastric pain and referred pains of gastric disease are separate manifestations, and that the former is actually produced in the viscus. Gastric pains may be classified into those which develop shortly after taking food, and those which develop after a much longer interval, when the stomach is again becoming empty, immediate and delayed pain. Gastric pain persisting apart altogether from the act of eating can generally be traced to extragastric causes, or to an extension of gastric disease beyond its seat of origin.

The author stresses the necessity of using good judgment in making a diagnosis. The conception that a clinical syndrome commonly associated with a certain lesion, such as duodenal or gastric ulcer, may be closely or exactly reproduced by other forms of irritative lesions might seem at first to increase existing difficulties in differential diagnosis. At the same time such a conception clearly serves to explain the frequent lack of agreement between clinical opinion and the findings of the surgeon.

By broadening our outlook and paying greater attention to detail in the examination of cases most of the mistakes can be avoided. The book can be highly recommended as a useful addition to our medical literature.

SURGICAL CLINICS

The Surgical Clinics of North America, St. Louis Number, Volume V, Number 5, October, 1925. Philadelphia and London: W. B. Saunders Company.

The usually high standard of these Surgical Clinics has been maintained in this number. Sixteen clinics are given, the subjects including clinics on horseshoe kidney, osteomyelitis, bleeding myoma, ileocecal tuberculosis, clubfoot, fracture of the larynx and cholecystography. There are 114 illustrations of excellent quality. While there is nothing in this volume of unusual character, it is of high quality and an excellent addition to those of the series which have preceded it.

Medicoliterary Notes.

A dreamy eyed, shabbily dressed man, who a year ago was a builder's laborer, was presented by Lord Oxford and Asquith with the Hawthornden prize of one hundred pounds sterling for the best work of imaginative literature produced during the year by a writer under forty. He was Sean O'Casey, the Irish dramatist who leaped so suddenly into fame with two dramas—*Juno and the Paycock,* and the *Plough and the Stars.* In presenting the prize Lord Oxford described *Juno and the Paycock,* the work for which it was awarded, as "the most moving and impressive drama we have seen for ten, it may be twenty, years."—*N. Y. Times.*

* * *

In a report recently issued by Dr. Eleanore Conover, assistant director of the Hospital Information Bureau of the United Hospital Fund, it is shown that sixty of the 134 public and private hospitals in New York City have women superintendents, and that women act not only as nurses and nonprofessional workers, but also as trustees and managers. Of the institutions canvassed, twenty-six per cent. had women exclusively on their boards, and fifty per cent. men only. Of the hospital patients fifty-six per cent. are usually women.

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A census of the orphanages in the United States taken recently has revealed the fact that only ten per cent. of the child inmates are orphans.

* * *

Footprints believed to be those of the earliest land vertebrate have been recently discovered in the Grand Canyon. They are supposed to have been made by the ancestor of the frog or salamander, which must have been much larger than his present day progeny, since the prints measure four inches in diameter and are an inch deep in the hardened, primeval mud. Plaster casts have been made of the foot prints, which are being studied at the National Museum of Natural History.

* * *

The Belgian War Office has recently ordered the abolition of the cavalry as a branch of the service which has outlived its usefulness. The Belgians contend that there is no field of war in which rifles and machine guns cannot rout the finest cavalry charge before the riders can get within damaging distance of the enemy.

* * *

One of McBride's recent publications of significance is James Branch Cabell's new novel, the first in three years, entitled the *Silver Stallion.* This, Mr. Cabell has announced, is the culminating romance of the cycle of Poictesme, but it stands third in the chronology, following *Figures of Earth* and preceding *Domnei,* and *Jurgen.*

* * *

In view of the widespread interest in the periodical medical examination, it is of interest to call attention to a labor-saving device for both examiner and subject, which has been designed and successfully used by Dr. J. Madison Taylor, of Philadelphia. This is the "preliminary history blank," to be made out by the patient or his family, and revised by the physician or specialist in any line. It forms an orderly record of all significant facts in a clinical history and the findings of previous advisors, and serves also as a basis for further or particularized examinations, directing attention to questions requiring special elucidation.

* * *

When the municipal authorities in several villages of the Austrian Tyrol levied a tax on every girl over twelve who had her hair bobbed, quoting St. Paul, I Corinthians XI, 15, to support their action, the local barbers' associations vigorously protested on the ground that this was interfering illegally with their trade. However, the mayors of the villages have so far turned deaf ears to the complaints of the barbers and the young Tyrolean beauties will have to chose between the bob and the tax.

* * *

What a Man Goes Through is the title of a recent publication from the Christopher Publishing House, Boston, by Dr. F. P. Millard. In spite of the book's rather ultra-popular and somewhat sentimental style, it contains a good many sensible and wholesome suggestions on the "art of living." Another publication of the same firm is entitled the *Law of Life* and *Human Health,* by G. R. Clements, LL.B., M.D. A foreword describes this work as "a book for the layman, the student of life, the health promoted, the doctor, the student of the soul, the religious worker, the minister, and the scientist,"—rather a large order! The text is full of health platitudes, interspersed with quotations from the Scriptures, popular poetry, and capitalized and italicized statements. The style reminds us somewhat of the old time circus broadside about the "Greatest Show on Earth!!!"

* * *

The few remaining snuff factories in Great Britain have recently closed their doors because there is no demand for the commodity which they manufactured and sold, according to the *Manchester Guardian.* The exsnuff makers blame the cigarette for the decline in the use of their commodity. In the days when smoking in the presence of ladies was not quite *au fait,* and was forbidden in many places, a pinch of snuff satisfied the desire for tobacco. The decline in the use of snuff began toward the last half of the last century and it grew feebler and feebler. There was little or no evidence of "Sir Plume of amber snuffbox justly vain" even half a century ago.

* * *

In view of the recent literary controversy which has raged over the book of poems by Natalia Crane, Brooklyn's girl poet, Merck & Co., manufacturing chemists of New York, have published in the January issue of Merck's Report a poem on Creolin which was sent to them by Natalia in 1923, when she was only ten years old.

* * *

One of McBride's early publications will be the translation of *A Brazilian Tenement,* a novel by one of that country's most popular authors, Aluizio Azvedo. It is described as presenting the life of a Brazilian community of the eighties, "a tenement housing a hundred families, in which blacks and whites mingle without distinction of race, the people simple as children in their mirth, and ruthless as beasts in their pursuit of food and love."

* * *

A valuable aid to physicians has been published in the form of a Digest and an Editorial Article on the Federal Narcotic Laws as They Apply to Doctors of Medicine, by the Los Angeles County Medical Association. While primarily intended for the use of physicians, the pamphlet is applicable also to dentists and to veterinarians.

* * *

The Department of Labor of the State of New York has recently issued as *Special Bulletin No.* 139 an analysis of 300 accidents in woodworking factories, with suggestions as to safe practice and suitable machine guards.

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The transactions of the Twenty-third Annual Conference of State and Territorial Health Officers with the U. S. Public Health Service, held at Washington, June 1-2, 1925, has been issued as *Public Health Bulletin No.* 161 by the Surgeon General.

* * *

Mental Hygiene for January is a number of unusual interest. The table of contents is as follows: The Dynamics of the Relation of Physician and Patient, by William A. White, M.D.; Psychoanalysis as General Psychology, by Dr. Otto Rank of Vienna; The Kindergarten as a Mental Hygiene Agency, by Arnold Gesell, M.D.; Enuresis as a Psychological Problem, by Helen T. Woolley, Ph.D.; "What Can I Do with Johnny?" by Adeline E. Darrt; The Relation of Intelligence to Behavior, by Ira S. Wile, M.D.; Physical Findings in Problem Children, by William E. Carter, M.D.; The Significance of Physical Disease in Relation to Behavior Problems, by Edwin R. Eisler, M.D.; A Form of Psychogenic Tiredness, by K. M. Banham Bridges; Psychiatric Phases in Vocational Guidance, by Harry M. Tiebout, M.D.; Report on the Ninth International Prison Congress, London, 1925, by Bernard Glueck, M.D.; Community Service Activities of the Danville State Hospital, by J. Allen Jackson, M.D., and H. V. Pike, M.D.; Abolition of Mechanical Restraint at the Willard State Hospital, by John B. Chapin, M.D.; and A Study of the Waiting Lists of State Institutions for Defectives in Pennsylvania, by Florentine Hackbusch.

American Medical Association

Seventy-seventh Annual Meeting, Dallas, Texas, April 19-23, 1926

(*Continued from page* 534)

The Scientific Proceedings

We present below abstracts of some of the more important papers read at the various section meetings. The publication of these abstracts will be continued in future issues of the JOURNAL.

SECTION ON PHARMACOLOGY AND THERAPEUTICS

CHAIRMAN, DR. THOMAS ORDWAY, OF ALBANY, N. Y.
SECRETARY, DR. N. M. KEITH, OF ROCHESTER.

The Action of Hepatic Extract in Hypertension.—Dr. Ralph H. Major, of Kansas City, Mo., said that with the increase in life span during this generation there has been an increase in the prevalence of the diseases of middle age and after, prominent among which was arterial hypertension. High blood pressure had no uniform etiology and was probably invariably produced by the abnormal contraction of the arterioles. Such contractions may be due to several causes, and it is probable that certain poisons of metabolic origin may be concerned. The author found that methyl guanidine, a normal constituent of the urine, was capable of producing a marked and prolonged elevation in blood pressure in animals and in man. In a series of laboratory experiments the action was studied of various substances which lower the blood pressure produced by guanidine. Certain liver extracts were very potent in both producing and preventing such an experimental hypertension.

The liver extract with which they have been working was obtained by a process of alcoholic fractionation and has a nitrogen content of .001 per cent. The presence of histamine, choline, and peptone can be excluded with a reasonable degree of certainty. The liver extract produced no sharp fall in blood pressure such as these three substances produce, has little effect upon normal blood pressure, and is not toxic in very large doses. It produced no contraction of smooth muscle as does histamine, but on the contrary inhibited contractions due to histamine. No symptoms suggesting anaphylactic shock have been encountered. The author said that they had standardized the liver extract against guanidine and had taken as a temporary unit the amount of depressor substance necessary to neutralize 0.1 mg. of guanidine in an animal weighing 2.5 kilograms. During the past year approximately one hundred patients suffering from high blood pressure have been treated with this histamine and choline free preparation. These patients have been divided into three groups, those under observation in the hospital, those in the out patient department and private patients. Some of the most suggestive results have been obtained in the latter group, who represent a type of patient of intelligence and perseverance. This group also had the least evidence of arteriolar and kidney involvement. The treatment on patients who have suffered from arterial hypertension for a long time and whose range of pressure over a period of years was known, has shown, as a rule, little evidence of specific effect. The most striking results in many ways have been obtained in patients whose hypertension was apparently of brief duration and in whom anatomical alterations have not yet taken place. The evidence obtained from such a group, however, cannot be entirely convincing. Improvement in symptoms has been a very striking feature in many patients even where no fall in blood pressure was observed. The evidence at the present time that the liver extract was effective in certain cases of arterial hypertension was very suggestive but not conclusive.

The Treatment of the Peripheral Vascular Disturbances of the Extremities.—Dr. George E. Brown, of Rochester, Minn., said that there were two main types of vascular disturbances involving the extremities, those of a functional or vasomotor origin, and those of an organic origin. The vasomotor disturbances were of two types, depending upon whether there was overaction of the vasoconstrictor or the vasodilator mechanism. Raynaud's disease represented a disturbance in which the peripheral constrictor mechanism was overactive. The peripheral arteries, capillaries, and venules participated in the disturbance. Erythromelalgia represented an overactivity of the vasodilator mechanism. There were two main disturbances of an organic nature: 1, thromboangiitis obliterans or Buerger's disease, and 2, endarteritis obliterans of an arteriosclerotic nature. The treatment of the vasomotor disturbances has been uniformly unsatisfactory. A surgical procedure which would interfere with or block the vasomotor paths to the distal vessels has long been sought. This was accomplished in the feet by removal of the second, third, and fourth lumbar sympathetic ganglia, and stripping the common iliac arteries as carried out by Adson. Calorimetric studies have demonstrated marked increases in the blood volume flow in the feet and clinical cure has resulted persisting to date.

The treatment of the diseases of an organic nature have been likewise difficult. Amputation has been the usual surgical procedure in thromboangiitis obliterans or Buerger's disease in the presence of gangrene and excessive pain. Lumbar sympathetic ganglionectomy has relieved pain and produced an increase in the blood flow of the feet as shown by surface temperature studies and determinations of the rate of heat elimination. Intravenous injections of radium chloride have given pain relief in Buerger's disease in fifty per cent. of cases for short periods of time. Intravenous injections of typhoid vaccine to produce systemic fever have been the most successful medical measures for alleviation of pain and increasing circulation in Buerger's disease. Protective measures in

conjunction with other measures were essential, as Buerger's disease was eventually bilateral. Prevention of amputation was the goal sought for. Eighty per cent. of the patients with Buerger's disease had had erroneous diagnoses before coming to the clinic. Much valuable time had been wasted, with various orthopedic and other measures during the early stages of this disease.

On the Use and Abuse of Heliotherapy in Tuberculosis.—Dr. Samuel H. Watson, of Tucson, Ariz., said that direct sunlight was a powerful agency, but it was as powerful for harm as it was for good. There was increasing evidence that in the treatment of tuberculosis heliotherapy was often excessively and unwisely employed. Its proper use should be confined to certain definite types of the disease, and even in these types, it should be practised only with extreme caution.

Chronic Hereditary and Familial Hemolytic Jaundice With Splenomegaly and Hepatomegaly: Further Observations on Five Cases Under Study.—Dr. W. Forest Dutton, of Amarillo, Texas, said that the cases under study represented the occurrence of this condition in five generations and were of special interest owing to the comparatively rare but characteristic features. The disease differed from that described by Murchison, Minkowski and Chauffard as congenital or familial hemolytic jaundice, in the very decided functional activity of the liver and its relation to the reticuloendothelial system. During the periods of crises, the concomitants of ordinary obstructive jaundice, such as clay colored stools, choluria, mild pruritis and slight icterus were present. The blood picture was markedly characteristic, but at times exaggerated. This made the diagnosis comparatively easy. An intimate study of these cases appeared to implicate the extrahepatic bile passages and the reticuloendothelial system. In explanation of the pathogenesis of jaundice of this type, it was obvious that jaundice was due most frequently to impairment of the excreting function of the liver. That is to say, the condition was usually traceable to inflammatory or degenerative changes of the liver cells. Mechanical or other obstruction to the outflow of the bile caused the bile to back up in the liver cells. This action damaged the cells by inflammatory or degenerative process and facilitated the accumulation of preformed bile in the liver cells. In the production of crises, the neuromuscular reflex apparatus of the bile passages played an important role. A total of spasm of the region of the sphincter of Oddi with contractions of the gallbladder, which force the bile back to the columns of the liver cells, produced a toxic irritative process of defense reaction in the hemopoietic apparatus.

In one of the cases under study, splenectomy was followed by marked improvement; in another, cholecystectomy apparently cured the condition. The severer the affection, the shorter the interval between crises. This was governed, however, by the degree of the inflammation of the ducts and the involvement of the sphincter of Oddi. In the milder cases, the duodenal tube, introduced after the method of Meltzer-Lyon, was frequently a prompt palliative measure; the severe cases may necessitate the removal of the gallbladder or spleen. Nonsurgical procedure in three cases proved eminently satisfactory. The predisposing causes of the crises should be taken under consideration. Proper diet, regulated exercise, fresh air and sunlight, freedom from excitement and sudden changes of temperature, and prevention of infections are essential prophylactic measures. Iron, arsenic and nuclein were administered by mouth and hypodermically with only fair results. The best results were secured by the intravenous use of these drugs.

It was inferred from the studies made that the close cooperation of the internist and surgeon would prove the solution of the problem presented by this disease.

SECTION ON GASTROENTEROLOGY AND PROCTOLOGY

CHAIRMAN, DR. SIDNEY K. SIMON, OF NEW ORLEANS.
SECRETARY, DR. FRANK SMITHIES, OF CHICAGO.

Epigastric Hernia: Its Diagnostic Importance in Gastrointestinal Affections.—Dr. Julius Friedenwald and Dr. Theo. H. Morrison, of Baltimore, Md., on the basis of a series of sixty-five cases of epigastric hernia, presented the following study:

Epigastric hernia, a rupture appearing in the linea alba between the umbilicus and ensiform cartilage, is an affection of not infrequent occurrence. However, insufficient attention has been accorded its importance. This is largely due to the fact that, inasmuch as many of these hernias are reducible and disappear in the recumbent posture, the position in which patients affected with abdominal disorders are ordinarily examined, they are frequently overlooked. This form of hernia constitutes from eight hundredths to three per cent. of all hernias. It occurs mainly in adults. It is rarely noted before the eighteenth year, and in the largest proportion of instances it occurs between the twentieth and fiftieth. A few cases have been observed during early childhood, and Sir Ashley Cooper and Cumston report two instances each of congenital origin. The disease is most frequent in males and definitely more in the laboring classes, especially in those subjected to strain upon the abdominal muscles.

Etiology.—Epigastric hernia is ordinarily acquired though occasionally it occurs congenitally. The acquired forms are due to trauma or prolonged strain upon the abdominal muscles; however, even in the acquired forms a congenital defect in the abdominal wall may exist, and by strain the preperitoneal fat may be forced to protrude. Further etiological factors have been noted in the form of weakness of the abdominal muscles caused by prolonged illness, emaciation, excessive vomiting, or coughing, or to direct trauma as from blows upon the abdomen.

Symptoms.—The symptoms vary greatly in different individuals and their severity is in no way proportionate to the size of the hernias. Frequently the patient is unaware of the presence of the hernia until it is accidentally discovered, and many years may elapse before symptoms are manifested. In others the symptoms are so slight, that the patient himself attaches but slight importance to them. Often tenderness on pressure over the region of the hernia is the first and only sign noted. This sign is of paramount

importance in the diagnosis of this condition, and occurs whether the hernia is reducible or not. The finding of this tender area along the linea alba is of the greatest aid in the diagnosis of this condition. In about half the cases the symptoms become aggravated, and may take the form of intense colicky paroxysmal pain appearing in the epigastrium especially on exertion or after intense coughing. The pain is most pronounced at the site of the hernia and is increased on pressure over this area. It may radiate to the back, chest, lower abdomen or legs and is often increased upon bending and when in the upright posture, and is relieved by reclining on the back. Other symptoms noted are loss of appetite and weight, nausea, vomiting, eructations, flatulency, distention, constipation and, occasionally diarrhea. Hematemesis has been rarely noted, and is usually associated with attacks of profuse vomiting. The symptoms may occur often in attacks continuing on for hours and days, and may recur at irregular intervals.

The symptoms may resemble those observed in ulcer of the stomach and duodenum, cholelithiasis, gastritis, ulcerative colitis, carcinoma, pyloric obstruction and chronic appendicitis.

On inspection of the abdomen a visible tumor may at times be observed in epigastric hernia along the linea alba between the ensiform and umbilicus; noted especially when the patient is in the erect posture.

On palpation the mass presents the sensation of a bit of fat and on coughing as if fluid were forced against the hand (*Spritzgefühl Lenhoff*). This sensation does not occur with tumors. An "electric bell reaction" has been described by Hall in the form of instantaneous belching by a touch on the hernia. This sign was noted in but a few of our cases.

In from twenty to twenty-five per cent. of the cases hyperchlorhydria is noted in the gastric contents together with a lowered motility and not infrequently visceroptosis with atony of the stomach.

Differential diagnosis.—Ordinarily but slight difficulty is encountered in the diagnosis of epigastric hernia, providing a painstaking physical examination is made of the abdomen. However, it is of importance to note that this form of hernia should not be confused with the ordinary umbilical hernia or visceral protrusions associated with diastasis of the recti. Attention has already been directed to the fact that the symptoms frequently resemble those of ulcer of the stomach and duodenum, cholelithiasis, gastritis, cancer and pyloric obstruction with which conditions it has been not infrequently confounded. While both epigastric hernia and ulcer have been observed in the same individual, many cases without question are confused with ulcer. In all instances in which atypical ulcer signs are present, or where malignancy is suspected, a thorough examination should be made so as to determine the presence of epigastric hernia. A careful x ray investigation with examination of the stools for blood will frequently point to the correct diagnosis. One cannot, however, lose sight of the fact of the possibility of the development of carcinoma of the stomach in a patient with epigastric hernia.

Treatment.—Certain cases are symptomatically relieved under medical treatment by means of applications of abdominal supports, binders or trusses providing the hernia is reducible. Such measures are, however, harmful when the hernia is irreducible and may actually aggravate the condition. The radical operation is simple and should be urged upon all patients unless some definite contraindication exists. Relapses following operation are infrequent.

Duodenal Stagnation.—Dr. Ernest Clyde Fishbaugh, of Los Angeles, Cal., reviewed the literature, and discussed duodenal stagnation as observed with no organic pathology. He said the symptomatology showed epigastric distress, anorexia, nausea, loss of weight, exhaustion and weakness. The physical findings were undernutrition and anemia. The laboratory diagnosis was based on bile in fasting stomach and at other times, and x ray evidence of a dilated duodenum. The treatment was rest in bed, corrected undernutrition and anemia, and abdominal support.

In duodenal stagnation as observed with organic pathology, the author said that when due to adhesions or scars, there was a history of previous operations, injury or ulcer; when due to carcinoma, there was a carcinoma within the duodenum or outside; tumors of the pancreas, gallbladder or ducts, stomach, kidney, retroperitoneal glands involving the duodenum. The symptomatology was the same as in duodenal stagnation with no organic pathology, with the addition of the carcinoma symptoms; and the physical findings were rarely a palpable mass; otherwise the same. The laboratory diagnosis was based on regurgitate bile in stomach, x ray evidence of duodenal stagnation, and stool findings. The treatment in these cases was operative.

The author's conclusions were that, a, duodenal stagnation was a more frequent condition than the medical literature would indicate; b, duodenal stagnation without organic cause could be successfully treated medically; and c, duodenal stagnation with organic cause should be treated surgically.

SECTION ON PATHOLOGY AND PHYSIOLOGY

CHAIRMAN, DR. HARRY J. CORPER, OF DENVER.
SECRETARY, DR. JOSIAH J. MOORE, OF CHICAGO.

On Conduction and Contraction of Cardiac Musculature in Water Rigor.—Dr. Clyde Brooks, of Tuscaloosa, Alabama, said that in a former paper, (*American Journal of Physiology,* 1906, vol. XVII, p. 218), he showed that skeletal muscle in water rigor loses its conductivity and its contractility at practically the same time. This is contrary to the results obtained by Biedermann who found that the frog's sartorius was able to conduct while in water rigor. Biedermann's results were used by Engelmann in his argument that the frog's auricle, when in water rigor, apparently conducted the contraction impulse without itself contracting. But according to the results obtained by Brooks, in his first article on water rigor, the muscle in Biedermann's experiment was not in complete rigor. Only the outer portion was in rigor. The inner core was normal. The inner, normal tissue contracted and conducted the impulse in a normal way. The present article carries out the same line of work on cardiac musculature. It shows that the frog's auricle does not conduct nor contract when it is in complete water rigor; but it conducts the impulse when the outer portion of the auricle is in

igor, which makes the auricle stiff and unable to contract (shorten). However, the inner portion contracts without shortening, and thus carries the impulse to the ventricle. The whole effect of these two articles is to support the neurogenic theory for the origin and conduction of the heart beat.

A Simple Practical Method of Estimating Blood Volume for Clinical Purposes.—Dr. W. N. Duke, of Kansas City, Mo., referred to the time honored custom of physicians diagnosing anemia or plethora by observing a patient's color, and said that his method of diagnosis was hopelessly incorrect, as in individuals having apparently normal quantities of blood, some had red faces, red lips and rosy ears, while others had pale faces, pale lips and pale ears. Furthermore, there was no standard of color to go by, and the patient's color was compared rather with the physician's idea of what normal color was. The face was an organ of expression, subjected to marked variation in color under the influence of many factors, such as emotion, change in temperature and exercise. The conjunctivæ, a time honored location for the estimation of color, was also subjected to variation under conditions other than those due to change in quantity of blood. When anemia was marked, pallor of conjunctivæ was observed with definiteness; when blood quantity was markedly increased, a tinging of the scleræ with pink became evident, which could not be observed with accuracy or definiteness when the change was small. This crude method of diagnosis has been properly supplanted to a large extent by laboratory examinations. With many physicians laboratory examinations have completely supplanted it, and they often assumed that a person was normal so far as blood quantity was concerned if the red count, hemoglobin per cent. and blood smear were normal. This was incorrect, for in many individuals who had normal red counts the blood volume was increased or reduced. If the red count and hemoglobin per cent. are known and if the volume of circulating blood were known, the total volume of circulating hemoglobin could be calculated. This was the all important fact to know in order to decide if the patient was anemic, plethoric or normal, but such a method of determining blood quantity, or rather mass quantity of hemoglobin, was too elaborate for general use.

The author described a method of estimating mass quantity of hemoglobin which he found to be remarkably practical and accurate enough for clinical purposes, that of comparing the color of the patient's palm with that of a normal individual. He said that the skin surface of the palm of the hand varied little unless the blood quantity was increased or decreased; it was not influenced by heat or cold, exercise, emotional disturbances or other factors as other skin surfaces because the palm of the hand was not an organ of expression, nor did it perform any important function in the regulation of body temperature as other skin surfaces do. Its color was rarely influenced by common conditions and common diseases except anemia or plethora, and for this reason was an ideal locality for the diagnosis of anemia or plethora. The author discussed the technic in detail, and said that when comparison was made patient and physician should stand or sit comfortably. The hand of each should be semiflexed and should be held at about the level of the apex of the heart. It was essential that the distance between the hand and the base of the heart be identical in both physician and patient and that in neither should the skin of the palm be stretched. It was assumed, of course, that the physician's hand was normal in color, thus a standard to go by. If the patient was slightly anemic his palm would be paler than the physician's, though the finger tips might appear the same. If the patient was anemic to such an extent that quantitative changes had occurred in the blood, if the red count or hemoglobin per cent. was slightly reduced, the difference in color between the patient's hand and the physician's would be so striking that it could not possibly be overlooked; the patient's finger tips and palms would both look white by comparison.

The author asserted that comparison of the palm of the patient's hand with that of a normal individual during and after blood transfusion and during and after venous section was a most reliable guide in deciding whether or not an adequate amount of blood had been introduced or withdrawn.

Evidences of Diseases as Shown in Fossil and Prehistoric Remains; Paleopathology.—Dr. F. B. Young and Dr. A. L. Cooper, of Scottsbluff, Nebraska, presented a short review of geological and paleological history, with an explanation of conditions governing the deposition of fossil material. Their material was almost wholly from the Cenozoic Era or Age of Mammals, and showed conditions of periostitis; osteitis, osteoma; osteomyelitis; arthritides, of both productive and destructive types; fractures, simple, compound, with excessive callus, and with infection; diseased teeth, with impaction of permanent and deciduous teeth, caries, and malformation; pyorrhea; necrosis of mandible, and other diseases, all of which were commented upon. A discussion of the persistence of certain types of bone lesions from the earliest of vertebrate life was presented. These persistent types were those mentioned above, and vertebral diseases of both the arthritis deformans type and the destructive or tuberculous type. All diseases so far identified were inflammatory in origin but neoplasms might be identified later by more careful histological examination. The authors discussed the origin of disease processes as suggested by the great antiquity of diseases.

Aspergillosis of the Lungs and Its Association With Tuberculosis.—Dr. Mary E. Lapham, of Highlands, N. C., said that her paper attempted 1, to describe from autopsy reports the pathological changes wrought in the lungs by *aspergillus fumigatus*; 2, to suggest the probability that aspergillosis of the lungs may predispose to tuberculosis; 3, that when both infections coexist, aspergillosis may complicate or inhibit recovery; 4, that aspergillosis is a primary disease which may result in pleurisies (acute and chronic), pneumonia, asthma, chronic bronchitis and the clinical picture of tuberculosis from which it can only be distinguished by cultures and inoculations; 5, that the stigma of tuberculosis should never be fastened upon a closed case without the diagnosis being confirmed by inoculations; 6, that every open case of tuberculosis should be tested for the complicating presence of aspergillosis; and 7, that the same problems might apply to cows.

SECTION ON OPHTHALMOLOGY

CHAIRMAN, DR. ARNOLD KNAPP, OF NEW YORK.
SECRETARY, DR. WILLIAM C. FENNOFF, OF DENVER.

Refractive Changes.—Dr. E. C. Ellett, of Memphis, Tenn., said that his paper consisted of a discussion of the changes that occur under the following circumstances: a, axial changes, increase of myopia, decrease of H, rarely the reverse; b, changes of curvature, usually of the cornea, temporary or permanent, corneal astigmatism, changes in lens curve, "second sight" by swelling in beginning cataract, same effect from increase of index of refraction of lens; c, change of index of refraction of media, lens aqueous and possibly vitreous from diabetes, quinine, inflammatory products, etc., iritis; d, muscular action; and e, unclassified or combination types.

Röntgenological Investigation on Four Hundred Optic Canals in the Living: Clinical and Anatomical Data.—Dr. Harry A. Goalwin, of New York, presented an analysis of four hundred canals investigated in two hundred patients for twenty-two different causes. Twenty types of pathology were found in forty-one per cent. of the cases; pathology found röntgenologically elsewhere in the skull in thirty-six per cent. Skull deformity with optic nerve symptoms occurred as frequently as optic nerve tumor. Among the changes observed were: fracture, hyperostoses, exostoses, periostitis, constriction, enlargement, destruction of roof and outer wall, erosion of all walls, foreign body, aneurysm of ophthalmic artery, osteomata, calcification of atrophic nerve, optic nerve tumor. The optic canal axis makes an average angle of thirty-eight to thirty-nine degrees with the horizontal as well as the vertical plane of the skull, irrespective of sex or racial stock; and has an average size of cross section of 4.1 by 4.5 mm., irrespective of age, sex or stock. No optic canal under 2.8 mm. diameter can contain a normal optic nerve.

A Clinical and Pathological Study of the Anterior Lens Capsule.—Dr. Arthur J. Bedell, of Albany, N. Y., said that his paper was a review of the anatomy and pathology of the lens capsule and was illustrated by photomicrographs and hand drawings. The congenital changes, such as pupillary membrane remnants and ganglion cell shaped areas of pigmentation, were discussed. He said it was possible to differentiate between regular and irregular folds of the capsule and also between those which were the result of spontaneous lens shrinking or traumatic lens absorption. In the latter the wrinkles were narrow with marked iridescence, while in the former the ribbons were decidedly broader. It was asserted that rupture of the capsule might be either partial or complete. A description of each type was given. The normal zonule of Zinn and its pathological variations were described. The numerous types of iris adhesions with exudate and vascularization were illustrated by case histories and pictures. Two unusually interesting cases were detailed, one a diabetic iritis injudiciously treated with insulin, the other a chronic iritis in which, following an iridectomy, the zonular fibres were slowly absorbed. The lens was finally dislocated in the vitreous from which it was removed with full restoration of vision. Another case illustrated the need of dilating the pupil to disclose the full extent of capsular changes. This was a minute laceration at the margin of the iris which, after the use of atropine, was found to be part of the torn sheet.

The author further stated that the examination of the anterior capsule could be made in life and the findings corroborated in the laboratory. In the ordinary sized pupil, "stars," exudate, pigment, various forms of adhesions, wrinkles and ruptures were seen; whereas when the pupil was dilated, a larger field was exposed, adhesions were stretched and a more complete examination was possible. The peripheral zone was the one of great interest because in it the zonular fibres were traced to their lens attachment. The congenital changes were recognized and the prognosis regarding them was more accurate as a result of slit-lamp examination. Finally, the anterior capsule must be carefully studied in the living eye if a complete understanding of it is to be made possible.

Color Blindness in Industry.—Dr. Archibald E. Chase, of Texarkana, Ark., said that examination for color blindness in applicants for hazardous occupations requiring color perception should be carefully performed. Some facts of the physics, physiology, pathology, incidence and classifications of color blindness were given. The important factor was the ability of the color blind to distinguish colors by intensity.

A review and classification of over one hundred tests for color blindness were given and a method suggested for recording cases of color blindness.

Rejection of applicants was discussed, and conclusions were drawn as follows:

1. It is clear to me that one who has not made a study of color sense and its pathology is not in a position to test applicants for occupations requiring color perception.

2. I believe that the stations at which such tests are made should be reduced to the fewest practical number, and the work at each should be periodically checked.

3. The usual test by worsteds alone eliminates only fifty per cent. of the dangerously color blind, and should be immediately discarded as the sole test of an applicant for train, yard and engine service on railways.

4. The Eldridge-Green type of lantern is the only lantern with sufficiently broad and accurate application to warrant the expense of purchase by industrial concerns. It should be used in conjunction with a simultaneous comparison test of the stilling plate type.

5. For day signals by reflected light, as in semaphore arms, switch targets, station boards, and flags, the tests above are sufficient. The saturation and intensity as well as wave length analysis of such signals vary greatly on different railroads and at different times. Such signals should have contrasting colors to prevent confusion with the background.

6. Field tests as ordinarily conducted by railroad officials are of little value. They are supposed to be made under working conditions. As a matter of fact they are frequently made under ideal conditions, with no conception in the mind of the official of what the

ests are intended to develop, of the effect of various atural conditions, and only rarely with any knowlge of the pathology of vision. If field tests are o be made at all, they should be conducted by experts, ith specially constructed apparatus using the standrd roundels and flags under all natural conditions of team, rain, fog and smoke, daylight, night, dusk or awn, at proper distances, with controls, by a method lanned in advance to cover all of the 288 possibilies.

7. For train, yard and engine service a man should ee all the spectrum with the possible exception of range, should not have a central color scotoma, hould not be markedly weak in any color, or be color gnorant or aphasic. Shortening of the red end of the pectrum should be positively eliminated.

In conclusion, let me leave this thought with you. ndustry looks to the ophthalmologist to examine aplicants and employees for color defects in vision ithout any question as to the quality of method or nowledge. How many are in a position to fulfill his trust and what percentage of you make a sufficiently accurate determination in every case of defective color sense to be able by concerted action to eply in time to the many unanswered problems in his field?

SECTION ON LARYNGOLOGY, OTOLOGY, AND RHINOLOGY

CHAIRMAN, DR. SAMUEL IGLAUER, OF CINCINNATI.
SECRETARY, DR. WILLIAM V. MULLIN, OF CLEVELAND.

Indication for Tonsillectomy in Children Based on End Results.—Dr. Alfred D. Kaiser, of Rochester, N. Y., said that the end results for tonsil nd adenoid operation were generally based on the mpressions one gained. If a careful investigation was made the favorable progress of a child was ttributed to the operation and no mention was made f the child who does equally well but in whom the onsils had not been removed. When one compared hese children in groups the striking results one anicipated were not so obvious. So long as tonsillecomy was restricted to extreme cases uniformly good esults would follow, but when one entered the field f prophylactic tonsillectomy less striking results were obtained and it became more difficult to contruct definite indications for the operation. If by areful control study it could be shown that the child who was subjected to this operation, even though here was no outstanding indication, was a little beer off ultimately than his unoperated colleague a ustification for the operation existed. Such an atempt had been made in this study. Based on an nalysis of the complaints of 1,200 children with the esults found three years later and compared to 1,200 hildren with similar complaints but in whom operaion was denied but also examined three years later, he following conclusions can be made bearing on he indications for tonsillectomy and adenectomy: , mouth breathing was a definite indication for tonsil nd adenoid removal; 2, frequent attacks of sore hroat and tonsillitis offered a definite cause for reoval of tonsils; 3, frequent head colds, relieved in eventy-five per cent. of the cases offered a definite ndication for tonsil and adenoid removal; 4, persistent enlargement of the cervical glands where no other cause was found was a just cause for tonsil removal; 5, malnutrition when other causes have been eliminated will be improved somewhat and therefore may be considered an indication; 6, chronic and recurrent discharging ears was an indication for the operation; 7, unexplained fevers, in the absence of other indications, may be a great cause for tonsillectomy but was no guarantee that they will not recur unless the fever came from an obscure infection; 8, for the prevention of respiratory infections such as laryngitis, bronchitis and pneumonia no positive indication existed as the incidence of infections was not influenced favorably or unfavorably by operation; 9, the prevention of diphtheria and scarlet fever may be considered an indication as the incidence of these diseases was slightly less in the operated group and where it did occur the sequelæ were less serious where the tonsils had been removed; 10, the presence of positive or unsuspected evidence of the rheumatic syndrome manifestations, rheumatism, chorea and heart disease was a definite indication for tonsillectomy in view of the lessened incidence of heart disease in the operated group.

Vertigo: Its Incidence in Endocrine Disorders.—Dr. Dana W. Drury, of Boston, said that in the study of vertigo, the most common difficulty was to ascertain definitely to what condition the patient applied the term vertigo, giddiness or dizziness. This was probably due to the fact that vertigo consisted of subjective symptoms which in each case required psychological analysis. Such an analysis was often impossible, both because of the transient confusion and inattention of the patient to his sensations during an attack, and also of the inadequacy of the language of the ordinary untrained observer to describe properly such abnormal and pathological sensations. It was also realized that vertigo might be a physiological as well as a pathological condition of the patient.

The paper offered the results of an investigation into the relative incidence of vertigo in disorders of the endocrine system. The report was based on the analysis of 1100 consecutive cases, all presenting stigmata of endocrine disease, received at the Evans Memorial for diagnostic study. The methods of analysis have been described elsewhere in detail and in brief may be said to comprise the collation of results from very thorough and comprehensive clinical and laboratory observations.

Of this series 377 or thirty-four per cent. presented a primary pathology which was nonendocrine in origin. Of this number seventy-six showed vertigo. The allocation of these cases to certain broad diagnostic groups was given in a tabular summary.

The most striking feature of the study was the relatively uniform incidence of vertigo in the major endocrine groups and four well characterized nonendocrine conditions. Lesions of the central nervous system showed nearly sixty per cent. increase in frequency, while in the other nonendocrine conditions the frequency of appearance was of the order of one in ten. The adrenal and pluriglandular cases were too few in number to make authoritative the absolute magnitudes observed. It is certain from this analysis that vertigo cannot be regarded as a sign presenting significance in the diagnosis of endocrine disease.

Abstracts from Current Literature

NEUROPSYCHIATRY

Surgical Treatment of Habitual Criminals, Imbeciles, Perverts, Paupers, Morons, Epileptics, and Degenerates.—A. J. Ochsner (*Annals of Surgery,* September, 1925) recommends a form of treatment for these degenerate classes by which society may protect itself against their progeny. It does not injure the individuals treated, causes no pain, produces no deformity, incurs no danger to life, interferes in no way with the health and happiness of those treated, and contains no element of punishment. It consists in the ligation and section of the vas deferens as follows:

1. Disinfection of the skin area; 2, infiltration of the skin and the tissues about the vas deferens with one per cent. solution of novocaine, or its equivalent; 3, an incision two cm. long; 4, the bringing forward of the vas; 5, double ligation one cm. apart with silk or catgut; 6, section of the vas above the point of ligation; 7, closure of the wound with one or two catgut sutures and dressing of the wound.

Postencephalitic Psychoses.—P. K. McCowan (*Lancet,* February 7, 1925) states that certifiable insanity is extremely rare as a sequel to encephalitis lethargica. It is highly probable that the virus of encephalitis lethargica has the power of remaining in the central nervous system in a potent form long after the subsidence of the acute symptoms. Many cases of insanity following encephalitis lethargica may not be true sequelæ, the encephalitis merely acting as a precipitating psychic cause. The possibility of suicide following encephalitis lethargica must not be lost sight of. Systematized delusions and dementia are sometimes found in postencephalitic psychoses. Psychotic symptoms during the acute phase of the disease are toxic in origin and of much better prognosis than postencephalitic psychoses. In the very rare event of a recovery in the latter it is practically certain that the case would not be one of a true sequela but of the secondary psychic type.

Condition of Accessory Sinuses in Encephalitis Lethargica.—A. Lowndes Yates (*Journal of Laryngology and Otology,* October, 1925) is inclined to think that in encephalitis lethargica, a condition of inflammation such as has led to a lack of function of the mucous membrane, namely, a ciliary paralysis and paralysis of mucous secretion, occurs, and there is a greatly heightened power of absorption of the mucous membrane.

It follows therefore that, if this hypothesis is correct, only those members of the community who suffer from this type of sinusitis in this region of the nose are potential subjects of encephalitis. It is necessary, however, for the transmission of the disease from one individual to another, that the air borne and filter passing virus of encephalitis lethargica should fall on soil previously prepared by inflammation which has produced an alteration in the normal mucous membrane, causing sinusitis or rhinitis, with total or partial paralysis of cilia and mucous secretion. The changes in the mucosa are produced either as a result of chronic rhinitis, or from a single heavy infection of the nasal mucous membrane, of the type known colloquially as influenza.

Epidemic Encephalitis.—L. Bériel (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* March 11, 1926) describes a form of encephalitis of which hundreds of cases have recently been observed in southeastern France. This form is clinically like multiple neuritis, and corresponds to the group termed by the author and Devic the "peripheral forms" of encephalitis. There are various indications pointing to an involvement of the whole spinal neuron in these cases. There is progressive, then regressive, flaccid paralysis, with a tendency to loss of the tendon reflexes and to wide diffusion, the cranial nerves being sometimes involved. Recovery follows nearly always, though there are some exceptional deaths from sudden bulbar involvement. A related group of cases is one in which the flaccid paralysis and loss of reflexes so particularly affects the trunk and the proximal portions of the limbs that the condition can be distinguished from the acquired myopathies only by consideration of the earlier course of the disturbance. Excised bits of tissue in such cases have shown actual muscular lesions of inflammatory type. Dozens of these cases have been observed, with uniform recovery. Sometimes there are muscular pains. In a third group of cases, with or without distinct encephalitic symptoms, the picture is at first that of multiple neuritis, but this passes slowly or through repeated relapses to the production of spinal manifestations. The reflexes continue lost, but the flaccid paralysis is replaced by a tendency to contracture, with Babinski's sign, urinary disturbances and bedsores, and sometimes exaggerated postural reflexes. The disturbance may then become stationary, leaving a chronic syndrome that recalls certain cases of disseminated sclerosis, or may continue to progress, with appearance of anesthesias of the spinal type, ascending phenomena and death. In addition to these groups, there have been appearing in recent years very many cases of the meningeal type, hard to differentiate from tuberculous meningitis and certain syphilitic cases. The simplest general classification of the protean clinical forms of encephalitis is that into the central, mesencephalic or bulbospinal forms; the meningeal forms; the peripheral forms with possible myopathic aspects, and the forms leading to spinal scleroses. All these forms, in different localities or epidemics, may be modified, present symptoms of the encephalitic series, or become merged. Among the important superimposed symptoms appearing as encephalitic indications are edema, sweating, and sympathetic and vasomotor symptoms in general. Muscular atrophy may occur, but only exceptionally is it permanent, in contrast to that of poliomyelitis. A clinically important feature of the polyneuritic and myopathic forms is the usually favorable prognosis; this applies even where the patient has lost all power of motion in the limbs or trunk.

The Rôle of the Nervous System in Metabolism—Influence of the Endocrine Glands.—A. Oswald (*Revue Française d'Endocrinologie,* March, 1925) calls attention to the fact that adrenalin, the pituitary hormone, and the hormone of thyroid gland all act upon metabolism in special ways and all have an intimate connection with the nervous system. His inference is that their effect upon metabolism is not on the cells directly, but accomplished through nervous channels. He cites cases to show that individuals in whom the administration of iodine excites the nervous phenomena of hyperthyroidism are all persons of great nervous lability and lose flesh rapidly under the medication. The recognition of this relation, he believes, greatly simplifies our conception of the office and effect of the endocrine organs. Their secretory products are agents which stimulate the nervous system, and upon this action in final resort depends the normal conduct of the phenomena of metabolism. The secondary character of hormones is rightly comprehensible only when the activity of the endocrine organs is fully understood to be under the control of the nervous system.

The Conditioned Reflexes and Children's Neuroses.—(*American Journal of Diseases of Children,* December, 1925) N. I. Krasnogorski, of Leningrad, Russia, from an investigation of conditioned reflexes in both normal and defective children, considers that "the normal highest nervous activity, the whole behavior of the child, is founded on the highly flexible balancing between irritation and inhibition." He finds also that "the keeping of the balance in children and in animals sometimes requires great energy. Every limitation of irritation by inhibition, every formation of the antagonistic conditioned reflexes, produces some symptoms of general excitement or inhibition. The intensity of these symptoms depends on the power of the reflexes which are being inhibited. The more intense the stimulation is, the more difficult it is for the organism to limit and inhibit it. Sometimes the mobilization of all resources of the nervous system of the child are needed in order to suppress a reflex of great power. In some children we observed restlessness, active defensive reaction, crying, while in others we observed a general inhibition with the complete disappearance of conditioned reflexes and even with the development of a deep sleep. The disturbances of the balance in pathologic children have, as a rule, a more lasting and profound character than in normal children. The intensive conflicts between irritation and inhibition form a favorable soil for the origin of different neuroses in childhood."

Incipient General Paralysis.—Henry A. Bunker (*American Journal of the Medical Sciences,* March, 1926) presents this summary:

1. If certain nervous or mental symptoms are consistent with incipient general paralysis, as certain ambiguous physical symptoms may be consistent with early tabes, then the presence of such symptoms in a patient, if they are not otherwise clearly to be accounted for, calls at least for examination of the pupils and of the knee and ankle jerks and for Wassermann test, and raises the question, even when the evidence from these two sources is negative, of the necessity for lumbar puncture.

2. A study of the earliest symptoms which may occur in patients who later develop outspoken general paralysis, such as has been carried out in seventy-four male patients and here reported, may throw some light upon the symptomatic indications for the dignostic procedures just mentioned.

3. In this study it was found that irritability holds first rank as an early symptom, since it occurred as the earliest abnormality, or one of the earliest, in forty-two, or fifty-seven per cent. of the seventy-four cases.

4. The character change whereby an individual is reduced in activity and spontaneity, loses some of his interests, tends to withdraw into himself, and is often described as having become "quiet," is likewise a common early symptom, for it occurred in twenty-eight, or thirty-eight per cent, of these cases.

5. Loss of weight as an early manifestation ranks third numerically. It occurred—and very often early—in twenty-two, or thirty per cent, of this series.

6. An increased tendency to sleep, somewhat more suggestive in itself than any of the foregoing symptoms, was an early manifestation in fifteen cases, or twenty per cent.

7. Speech defect, memory defect, and judgment defect have considerable diagnostic value in themselves, but they were found in this series among the earliest symptoms in only eleven cases, fifteen cases, and seven cases, respectively.

8. Visual impairment, digestive disturbance, insomnia, fatigability, headaches, tremor, and rheumatoid pains were present as the earliest manifestations in a few cases; neurosyphilis must sometimes be considered in the differential diagnosis of these very undistinctive symptoms.

Localization of Brain Tumors by Ventriculography.—W. Pierson (*Journal of Cancer,* October, 1925) states that an accurate picture of the ventricular system of the brain may be obtained roentgenographically by the withdrawal of cerebrospinal fluid from the ventricles and the substitution of air. By examining first one side and then the other it is possible to obtain separate roentgenograms of each lateral ventricle. Following the completion of each lateral view, the head is carefully turned and the occiput placed down. This position will give the size, shape and position of the anterior horns of both lateral ventricles and show a cross sectional view of the third ventricle. Finally, a posteroanterior examination is made, which gives the desired information regarding the body and the posterior and descending horns of the lateral ventricles. The findings must absolutely indicate the position of the tumor. Moreover, the presence of suspected tumors can be excluded in fifteen per cent. of the cases on the basis of negative findings following the complete examination.

Most tumors are localized by the effects produced on the two lateral ventricles, though the third and fourth ventricles play an important part. A tumor of any size situated in either cerebral hemisphere will be shown by filling defects and a displacement of the corresponding ventricle. The opposite ventricle may also be dislocated and its size modified. The tumor by its size or position may cause obstruction of one or more of the ventricles, as shown by a dilatation of the ventricles and by inability of the air to pass beyond the point of obstruction. The location of the point of obstruction will immediately locate the tumor. A cerebral tumor can be differentiated from a cerebellar tumor, because the internal hydrocephalus accompanying the latter is demonstrated by a symmetrical enlargement of the lateral ventricles.

The procedure of Dandy consists in making two small openings in the posterior portion of the skull. A needle is inserted in the posterior horn, and the cerebrospinal fluid is aspirated in small quantities to prevent a negative pressure. An equal amount of air is substituted for the fluid withdrawn. If a ventricle is so reduced that it is impossible to withdraw sufficient fluid to make the injection of air a safe procedure, the opposite ventricle should be punctured and air injected. The air should be withdrawn, especially if a large amount has been used, as soon as the x ray examination is completed.

The procedure is dangerous and complicated, but in competent hands it should not be nearly so dangerous as an exploratory craniotomy, and it frequently yields more information than the latter operation.

Wagner-Jauregg Treatment of Dementia Paralytica.—S. Grossman (*Lancet,* July 4, 1925) finds that the treatment of general paralysis with benign tertian malaria is justified; the technic is simple; the fever can be easily and quickly controlled by quinine. In the author's experience no malaria relapses have occurred. The more recent the case, the better the prognosis; but even late cases improved physically. The remissions are more marked than in the untreated cases. An attack of malaria seems to produce immunity to artificial inoculation. Arsenical medication used in any chemical combination only has failed in the treatment of general paralysis of the insane. The Wassermann reaction in the blood and cerebrospinal fluid, the Ross Jones and Weichbrodt reactions in the latter, remained unchanged. Neither are the cell contents of the cerebrospinal fluid influenced by the production of malaria. Even in cases of complete remission some physical signs of general paralysis of the insane remain, e. g., Argyll Robertson pupil; greasy complexion; and exaggerated reflexes.

Pharmacological and Therapeutic Effect of Ergotamin on the Sympathetic Nerve.—E. Rothlin (*Klinische Wochenschrift,* July 23, 1925) has shown that ergotamin—the alkaloid of ergot—in addition to the specific effect of ergot in obstetrical and gynecological practice, also possesses the property of paralyzing the peripheral endings of the sympathetic nerve in a selective manner. This specific paralyzing effect of ergotamin affects not only the stimulating end fibers of the sympathetic nerve, similar to that of ergotoxin, but also the inhibitory end fibres.

The pharmacological antagonism between pilocarpin and atropin exerted upon the parasympathetic nervous system is analogous to the antagonism between adrenalin and ergotamin upon the sympathetic nervous system. These pharmacological results, as well as the clinical experiences acquired up to date, speak in favor of the assumption that ergotamin should be assigned a great significance from a differential diagnostic and therapeutic viewpoint in sympathicotonic disease pictures.

Hydrocephalus.—McKim Marriott (*Medical Clinics of North America,* July, 1925) states that the first step in the treatment of hydrocephalus is to determine whether or not the hydrocephalus is the result of an active meningitis or if it is due to obstruction between the ventricles and subarachnoid spaces. Information regarding the first point can be obtained from an examination of the cerebrospinal fluid. The fluid obtained by lumbar puncture may be clear, whereas that obtained from the ventricles may contain an excess of cells or may even be definitely purulent. Both ventricular and lumbar puncture should usually be done. This is easily accomplished in the case of infants. Information as to communication between the ventricles and the subarachnoid spaces is obtained by observing whether or not there is a free flow of fluid on lumbar puncture, and if the fluids in the ventricles and in the subarachnoid spaces are under the same degree of pressure; further, whether pressure on the fontanelle causes a distinct increase in the flow of fluid from the lumbar puncture needle.

In the case of active meningitis due to the meningococcus appropriate serum treatment should be instituted, and it is well to note in this connection that in the case of infants with meningococcus meningitis it is advantageous to administer serum into the ventricles as well as into the spinal subarachnoid space. In syphilitic meningitis appropriate antisyphilitic treatment should be instituted. In the so-called acute hydrocephalus of tuberculous meningitis treatment is at best palliative and should consist in frequent lumbar punctures.

When hydrocephalus is of the communicating type, i. e., when there is free communication between the ventricles and the subarachnoid, diuretin should be administered, and usually this treatment leads to good results. When the hydrocephalus is of the noncommunicative type surgical procedures are indicated.

Cerebral Palsies of Early Life.—B. Sachs (*American Journal of the Medical Sciences,* March, 1926) maintains that in dealing with the cerebral palsies of children the exact form of paralysis is the unimportant factor. It is much more important to determine, whatever the form may be, whether the palsies are due to a morbid process that had its beginnings in the prenatal period, or at the very time of birth, or whether they were acquired later in life as the expression of vascular accident, or as the result of an infectious encephalitis.

The Plantar Lines in Mental Defectives.—Examination of the feet of 618 mentally defective children showed, according to Thomas Brushfield (*British Journal of Children's Diseases,* December, 1925) that 207 children had feet with three plantar lines, 102 had two plantar lines, 199 possessed one (oblique) plantar, while 110 had no plantar lines.

Psychical Disturbances in the Diseases of the Glands of Internal Secretion.—Study of a number of patients with palpable gland disease, such as exophthalmic goitre, myxedema, and diabetes, in the Boston hospitals inclines C. M. Campbell (*Endocrinology,* May-June, 1925) to believe the psychic features in these cases are due to constitutional factors and other causes, for the most part, rather than to the glandular lesion.

MALIGNANCY

Cancer Prophylaxis.—W. W. Chipman (*Canadian Medical Association Journal,* May, 1925) says that much can be done in the way of prophylaxis of cancer of the uterus and presents the following as good prophylactic rules:

1. If in any case of labour, the delivery has been affected by forceps, or by a breech extraction; if the child has been unusually large, or the labor precipitate; make an immediate examination of the cervix. If a tear be found deeper than half an inch, coapt the raw surfaces of this tear by interrupted catgut sutures.

2. In any obstetrical case, make invariably a "discharge examination." If any cervical lesion be found, treat it, or if repair be necessary, execute this at the end of lactation.

3. If at any time in the woman's menstrual life, the menstrual habit be depraved, in the way of a menorrhagia, a metrorhaggia, or a leucorrhea, make a thorough examination. It may be necessary to explore, or even to curette the uterus. Identify the lesion by the naked eye or microscope, and treat it as it deserves.

4. Uterine bleeding, however slight, or a conspicuous leucorrhea, occurring after the menopause, are danger signals. In such a case, if free bleeding follow the passage of a uterine sound, or the curettings be abundant, perform an immediate hysterectomy.

5. Remove by hysterectomy all submucous, or intramural fibroids.

A New Outlook on Cancer: Irritation and Infection.—James Young (*British Medical Journal,* January 10, 1925) states that there are two completely independent factors underlying the change of a normal cell into a cancer cell. The first is an antecedent cell susceptibility; the other is an immediate cancerogenic factor. Analysis shows the antecedent cell susceptibility to be the capacity for continued proliferation in the body, and when possessed naturally by the cells ("embryonic"), allows a development of cancer when the immediate cancerogenic factor is added. In the case of a mature epithelium this cell susceptibility is acquired often as a result of chronic irritation. When the cancerogenic factor is now added cancer is possible. In plant tumors this dual phenomenon—cell susceptibility and immediate agent (parasite)—is well seen.

An organism with a complex life story has been obtained almost constantly from cancer. It possesses yeast, coccal, bacillary, and amorphous phases, and each of these can grow true to type and live a wholly independent life. Evidence has been given that the parasite lives in symbiosis with the cancer cell in the amorphous phase, and it is from this that all the other ohases are derived during incubation of a cancerous growth. The discovery of this phase, it is claimed, provides the key to the cancer phenomena, as also the key to the morphological variants.

The morphological features of this parasite resemble the life story described by many writers for other classes of pathogenic organisms. There is now strong evidence to support the view that a similar morphological variability is common to all bacteria and that bacterial classification is in need of revision.

The parasite belongs to familiar bacteria which are wide spread in nature, and the ease with which cancer can b induced experimentally in animals by chronic irritation sug gests that tissue susceptibility wherever found implies th immediate risk of infection by a ubiquitous organism.

The free and universal exposure of man and animals t infection, combined with the (relatively) small proportio of the total which develop cancer, suggests the all im portance of cell susceptibility, and corresponds to th laboratory difficulties attendant on an attempt to produc cancer experimentally by the injection of organisms. Th marked proliferation of primitive tissues sometimes in duced in animals by the experimental injection of the car cer organism may resemble an ordinary infective proces while in an advanced case it stimulates a progressiv lymphoma or pseudo leucemia.

Isolation of the Glover Microorganism from Blood an Tissue of Carcinomatous Cases.—Julian Loudon an James M. McCormack (*The Journal of Cancer,* July, 1925 lay claim to having isolated the identical microorganisr from the blood of patients suffering from carcinoma of th lip, tongue, palate, stomach, colon, rectum, kidney, breas and uterus. The same microorganism has been isolate from primary and secondary carcinomatous tissue fro the breast, liver, ovary, omental glands, and glands of th neck. Similar or identical microorganisms could be cu tured from the tissues of carcinomatous mice. On all ex cept the Glover medium, the cancer microorganism assume the coccus form. Rigid aseptic precautions were used i every case. In each case controls were used, and in nor of these was any cultural growth obtained. Up to th present time the authors have been able to culture th Glover microorganism from the blood of every carcinoma tous patient investigated. All patients were fairly we advanced and the diagnosis was confirmed by several cor sultations. Hereafter they hope to produce additional ev dence to prove that the Glover microorganism is the onl agent in reference to carcinoma that fulfills Brand's postu late of universal applicability.

Etiology of Malignant New Growths.—W. E. Gy (*Lancet.* July 18, 1925) has made some investigations whic lead him to look upon cancer—using the term in its wide sense—as a specific disease caused by a virus (or group viruses). Under experimental conditions the virus alone ineffective; a second specific factor, obtained from tum extracts, ruptures the cell defences and enables the virus infect. Under natural conditions continued irritation tissues sets up a state under which infection can occu The connection between the specific factor of a tumor a an irritant remains to be investigated. Some of the rel tively unimportant "irritants" are known, such as coalta paraffin oils, etc. The virus probably lives and multiplies the cell and provokes the cell to continued multiplication.

The methods of experiment described, and the obvio extensions of them, give the means of classifying the viruse of investigating the nature of the specific factor, and testing suspected irritants, such as preservatives in fooc which may play an important part in the genesis of a tumc

Neuroepithelioma of the Spinal Cord.—J. A. Hertwe and L. D. Stevenson (*Annals of Surgery,* February, 192 report a case of interest on which they comment as follow It seems evident that in the face of the testimony of so mar observers a true diagnosis cannot be made until medulla symptoms appear. It is worthy of emphasis, however, th tumor formation in the posterior lateral region may be closely related to the posterior nerve roots that root pain the only symptom for considerable periods. The type tumor here studied, because of its soft texture, its point origin beneath the arachnoid, and its retention under th membrane, is particularly adapted to exerting the banef pressure on the roots.

So far it seems impossible to predict the nature of the tumors in the cord or brain before operation. When fou at operation they may have the most innocent appearan and be capable of rather easy removal. However, like th related tumors of the adrenal and retina, they are maligna with a tendency to form metastases in the neighborhood an potentially at least, distant metastases as well. It wou seem to be wise, therefore, to remove them with as litt disturbance of the tumor as possible and to realize th removal of any portion of them by curette or sharp disse tion may be followed by recurrence of the tumor with rapidly fatal result.

Radiation Therapy in Malignant Disease.—G. E. Pfahler (*Surgery, Gynecology and Obstetrics,* October, 1925) holds that preoperative irradiation will devitalize the cancer cell and prevent its transplantation or dissemination, while postoperative irradiation should destroy remaining carcinoma cells.

Thorough and skillful treatment by radiation offers most in all stages of carcinoma of the cervix. Sixty to eighty per cent may be expected to recover if treated in the earliest stages, while less than one per cent will recover in the late stages.

Radiation will not cure generally disseminated cancer. The more extensive the disease, the less the chance of recovery. Radiation is a local method of treatment.

Lessons Learned from Failures in the Röntgen Ray Treatment of Cutaneous Cancer.—Henry H. Hazen (*Journal of Cancer Research,* September, 1925) reports that a consideration of the facts observed would seem to indicate that the usual doses of the röntgen rays do not directly kill the cancer cells, but stimulate certain defensive reactions in the tissue. One of the defensive mechanisms is a local reaction, but there is good reason to believe that there may likewise be some general immune process concerning the nature of which we are still ignorant. From the practical standpoint preoperative radiation has a scientific basis. In treating cutaneous neoplasms by either the röntgen rays or radium, care should be taken that there be a fairly wide margin of normal tissue exposed in order that the defensive reaction be established. Cancer invading cartilage or scar tissue cannot be satisfactorily dealt with by irradiation.

Radium in Breast Cancers.—B. J. Lee and R. E. Herenden (*Annals of Surgery,* September, 1925) maintain from their study of a series of cases that preoperative and postoperative radiation are of value as an adjunct to surgery in the treatment of carcinoma of the breast. Best results are obtained when both are used. The basis for use of preoperative radiation depends partly upon clinical experience and partly upon histological evidence. The more malignant the tumor the more ready its response to radiation and the more extensive are its clinical evidences of regression. Clinical experience therefore strongly favors the use of radiation prior to operation to convert temporarily, at least, a growing tumor into a regressive one. The changes induced by radiation in the environment of the tumor also furnish a less favorable soil in which remaining tumor cells may grow, and renders dislodged cells less viable wherever they may be carried. Postoperative radiation is recommended because, even with the best surgical technic, dislodged tumor cells may be left in the operative field, or may have escaped removal.

The technic and doses of both preoperative and postoperative radiation as employed by the authors are presented.

Further Experience in Cancer of the Breast.—B. B. Davis (*Surgery, Gynecology and Obstetrics,* September, 1925) suggests a tentative grouping based on local condition and not on the duration of the disease, as follows:

Group I. The very early case. This will include those with a nodule, with no puckering of the skin, no fixation of any kind and no palpable glandular enlargement. Manifestly, this group will require exploratory incision and microscopic evidence to make the diagnosis. A high rate of recovery, eighty-five to ninety per cent., is to be expected in this group.

Group II. The early case. Here the preoperative diagnosis is more certain. There is some puckering of the skin, the outline of the mass is a little less definite, the perfect normality of the nighborhood tissues is not so easy to confirm; but there are no enlarged glands to be felt. The clinical and macroscopical examination will usually determine the diagnosis, but in some cases the microscope will be a necessary aid. The prognosis is still good but a little less favorable than that in Group I.

Group III. The midline case. In this group the diagnosis is still more apparent. The puckering of the skin is pronounced. Examination of the axilla may leave one in doubt. If the mass is centrally located, retraction of the nipple may be present. A fairly positive preoperative diagnosis can be made, and where the mass is cut across, it will show the characteristic cancer appearance. A good percentage of these cases should be cured by operation.

Group IV. The advanced case. One or more of the following conditions will be present: the skin will be sufficiently involved to move with the mass; there will be definite fixation to the deeper tissues; or a positive involvement of the axilla will be manifest. The prognosis is much worse and will be somewhat affected by the presence of one or two or all of the conditions named.

Group V. The very advanced case. This group includes cases the diagnosis of which may be made by the tyro. The mass is much fixed. There may be discoloration of the skin or even ulceration over the mass, and the axilla contains hard masses more or less fixed. The prognosis in this group will be bad; much worse than most have been led to believe.

Group VI. The inoperable case. Absolute fixation of the breast to the thoracic wall, carcinomatous thickening or nodules extending widely over the chest, extensive ulceration, a fixed mass in the axilla, a definite involvement of the supraclavicular glands, and more or less widespread metastases make the case eligible to this group. Any or all of these conditions render the case hopeless. Only palliative treatment is to be suggested for this group.

It is the author's opinion that as the results are studied, more and more of the cases in the "very advanced group" will be transferred to the "inoperable group." He says he is losing confidence in the value of surgery in the cases that already show widespread infiltration.

Varying Degrees of Malignancy in Cancer of the Breast.—Robert B. Breenough (*Journal of Cancer Research,* December, 1925) considers the several factors that enter into the determination of the degree of malignancy of cancer of the breast and summarizes them as follows:

1. The degree of malignancy of a given case of cancer of the breast can be determined with reasonable accuracy by study of the histology of the original tumor; and three classes, low, medium, and high malignancy, can be distinguished.

2. Such a classification is of importance in prognosis, and should be of assistance in estimating the value of therapeutic measures.

3. In estimating the degree of malignancy of a given tumor, the following factors are of importance:

a. Degree of differentiation as shown by arrangement of cells around an open gland lumen (adenocarcinoma).

b. Degree of secretory activity of cell protoplasm as shown by vacuoles and droplets of mucoid material.

c. Uniformity of size of cells and of nuclei, as opposed to variations in size.

d. Absence of presence of hyperchromatic changes in nucleus, and few or many mitotic figures, and whether irregular or not.

e. High malignancy is shown by cells and nuclei of irregular shape and size without secretory function, and arranged in solid columns, large or small, together with numerous and irregular mitoses and hyperchromatism. The extreme degree of these features is pleomorphism.

4. A high degree of round cell infiltration appears to indicate a considerable degree of cell degeneration, and is not to be relied upon as an indication of the resistance of the individual to the cancer growth.

5. Hyalinization of the stroma does not indicate active resistance to the tumor growth but is rather a factor of the age or previous condition of the mammary tissue in which the tumor lies.

Primary Sarcoma of the Spine.—S. Kleinberg (*Annals of Surgery,* February, 1925) presents a case first diagnosed as Pott's disease, of which he says: In this case and in a number of other tumors of the spine we did not find Bence-Jones bodies in the urine. I am inclined to the opinion that when this test is negative, it does not help us any, as the case may still be one of a tumor of the bones. This leads me to the conclusion that the test has no value unless it happens to be positive. In a similar case in the future the signs in order of importance which would incline one away from the diagnosis of Pott's disease and to that of a neoplasm are: 1, lack of destruction of the intervertebral discs; 2, rapid destruction of the vertebræ, and 3, early appearance of symptoms of a transverse cord lesion.

Embryoma of the Kidney.—G. B. Packard and A. Blumberg (*American Journal of Surgery,* December, 1924) so designate the mixed tumor of the kidney found in infancy because of its embryonal origin. Early operative removal should be the treatment. Operative mortality is high and increases with the duration of the tumor. Later, metastasis is the rule.

MEDICAL JOURNAL AND RECORD

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Medicolegal Notes.

ACCIDENTAL DEATH AND DEATH BY ACCIDENTAL MEANS

The Utah Supreme Court holds, Carter v. Standard Acc. Ins. Co., 238 Pac. 259, that there is no substantial distinction between the phrases "accidental death" and "death by accidental means" so as to preclude recovery under a policy covering death by "accidental means" for accidental death from an overdose of landanum, taken to induce sleep.

STATEMENTS MADE TO MEDICAL EXPERT AS RESULT OF HIS EXAMINATION HELD ADMISSIBLE

The Texas Commission of Appeals holds, Missouri Pac. Ry. Co. v. Baldwin, 273, S. W. 834, that statements of the plaintiff in a personal injury action made to a medical expert to whom he went for the purpose of making him a witness on his behalf, the statements being made in connection with and as a result of the examination made by the doctor, were admissible.

HERNIA HELD RESULT OF ACCIDENT

An employee was run into by a lumber truck which he was handling in the course of his employment. He was severely bruised in the abdominal region. There was a sudden onset of severe pain in the groin. There had been no previous symptoms of hernia, which developed immediately after the accident. There being no evidence to the contrary, the Minnesota Supreme Court held, Frederickson v. Burns Lumber Co., 204 N. W. 161, that the hernia was due to the impact of the truck, an accident arising out of and in the course of the claimant's employment.

CARE OF HOSPITAL FOR DELIRIOUS PATIENT

In an action against a hospital by a patient who while in delirium, climbed or fell from a third story window, sustaining serious injuries, the South Dakota Supreme Court, in Fetzer v. Aberdeen Clinic, 204 N. W. 364, aproved an instruction charging that no one is required to guard against or take measure to avert that which, under the circumstances is not likely to happen, or, more accurately, which a reasonably prudent person under the circumstances would not anticipate as likely to happen; that no man does or is required to take measures to avert dangers which the circumstances as known to him do not suggest as reasonably likely to happen; that these circumstances include the patient's mental condition and aberrations and what he is likely to do by reason thereof; that the fact that a patient may be delirious or not in control of his mental faculties is not sufficient to put the dependant hospital, its agents, servants or employees on their guard to prevent selfinflicted injury; that it is only when they have notice of conduct or language on the part of the patient evidently a hallucination or a purpose to inflict such injuries, and, in this case, unless the defendants, their agents, servants and employees had notice or knowledge of conduct or condition of mind on the part of the plaintiff which indicated that he intended selfinjury or selfdestruction, or intention to escape from the building, the plaintiff could not recover.

The burden was held to be on the plaintiff to show his own mental incapacity and also notice thereof to those sought to be charged; and this notice of the condition of the patient must be such as to give those sought to be charged reason to believe that his doing injury to himself may be anticipated. To hold hospitals, nurses, or physicians responsible for injuries which patients may inflict upon themselves, unless the patients have given evidence of the probable danger of such infliction of injury, would, it is held, be a harsh rule.

INSURANCE POLICY PROVISION REQUIRING PHYSICIAN'S WRITTEN REPORT EVERY THIRTY DAYS HELD VALID

The Texas Court of Civil Appeals holds, American Nat. Ins. Co. v. Burns, 273 S. W. 339, that there is nothing unreasonable in a provision of an accident policy requiring the insured who claims compensation for disability caused by injury or sickness which lasts longer than thirty days to keep the company informed of his condition by furnishing it with his physician's report every thirty days; such provision being manifestly made for the protection of the company against fraud and imposition. It is also held that the provision is not prohibited by V. S. Stat. 1914, art. 5714, providing that any stipulation fixing the time within which notice of claim for damages shall be given at a less period than ninety days shall be void.

INJURED EMPLOYEE ENTITLED TO SELECT HIS OWN DOCTOR

Although the general rule is that the employer who is called upon to pay the cost of medical services under the Workmen's Compensation Act has a right to select the doctor who shall treat the injured employee, the Michigan Supreme Court held, in Gardner v. Michigan Sugar Co., 231 Mich. 331, 204 N. W. 100, that under the facts and circumstances shown by the evidence, the claimant was warranted in securing the medical attendance of his family physician at the employer's expense. The employer's doctor was absent, and his brother, who looked after his patients, after one treatment, referred him to another doctor. Not satisfied with his progress under this doctor, the employee went to his family physician, the employer, on being notified of this, making no objection and tendering him no other medical service.

DEATH FOLLOWING DRINKING OF LIQUOR CONTAINING FUSEL OIL HELD NOT DEATH FROM ACCIDENTAL MEANS

In an action upon an accident policy the Iowa Supreme Court held, Calkins v. National Travelers' Ben. Assn. of Des Moines, 204 N. W. 406, that evidence that deceased had been a hard drinker and that, while drinking liquor consisting largely of fusel oil, he accidentally took more than he intended, was not sufficient to warrant a finding of death by accidental means. Fusel oil was defined as a volatile oil liquid obtained in the rectification of spirituous liquors made from the fermentation of grain, potatoes, the marc of grapes and other material. Its chief constituent, amyl alcohol, is described as a direct nerve poison. According to the testimony, fusel oil has a tendency to settle to the bottom of a vessel containing "hooch" manufactured from grain and potatoes.

HEALTH POLICIES

The insured under a health policy claimed indemnity under a paragraph in the policy providing for a stipulated rate during the time he was "necessarily, continuously and actually confined within the house." The trial court instructed the jury that the mere fact that the insured was able to walk from his house to the doctor's office, or take a railroad train to go to a hospital for treatment, did not in itself necessarily break the continuity of the confinement or the consecutiveness of the number of days he may have been confined to the house, within the meaning of the paragraph controlling indemnity for confining illness. The North Dakota Supreme Court held, Jentz v. National Casualty Co., 204, N. W. 344, that, under the evidence, the instruction was not erroneous.

It was also held, under the evidence, that the disease known as torticollis does not, as a matter of law, result wholly or in part from rheumatism, and that the liability of the insurer to an insured suffering from torticollis was not necessarily controlled by the policy paragraph regarding chronic diseases.

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The Danger of Infection Following Operations Where the Eyeball Is Opened

*With a Report of Fifteen Hundred Successful Major Operations Performed According to the Author's Method**

GEORGE HUSTON BELL, M.D., F.A.C.S.

New York

The danger of infection in cataract operations is ever present until the healing process is complete. All investigators have agreed that postoperative infection in modern eye surgery, with rare exceptions, has its origin in the conjunctival sac; since we cannot sterilize the cul-de-sac, then we must do the next best thing. My method makes war on the saprophytes of the conjunctival sac and the cornea, which are the organisms responsible for primary infection. In my first paper (1) read before the American Medical Association in 1921, my technic was outlined and since then has been changed to the extent that we now use argyrol more freely than formerly.

In no case of our fifteen hundred operations did we wait for a single day before operating to clean up whatever was found in the smear from the conjunctival cul-de-sac. Much valuable time is lost by trying to clean up the conjunctiva when there is a questionable smear. The time that is lost is due to inadequacy of hospital facilities and also to patients. According to my method, we do away with all of this lost motion. If a patient's eye looks clinically clean, we go ahead and operate regardless of the findings in the smear. The socalled senile cataracts are not looked upon as clinically unclean by us, but we do exert pressure over the lacrimal sac in such a way as to cause the smallest quantity of fluid present in the sac to flow back through the canaliculi. Cases of mild infection limited to the sac will thus be detected and must be cleared up before we regard the eye as clinically clean. In other words, we pay no attention to the findings of the bacteriologist.

I have such strong faith in the silver and argyrol treatment that I am anxious for all ophthalmic surgeons to give it fair trial, and it gives me great pleasure to state that Professor Lindner of Vienna is using my method now as regular routine in his clinic.

TECHNIC

First step.—The focal infections, such as oral sepsis, diseased tonsils, and toxemias of the intestinal tract, must be removed. I hold that it is just as necessary for the ophthalmic surgeon to "get his house in order" before subjecting his patient to a major operation upon the eye, as it is for the general surgeon to clean house. Every patient of mine, whether clinical or private, must stand the acid test for the "three T's" (2)—teeth, tonsils and toxemia—before we even consider the operation. This routine is carried on in my clinics at the New York Eye and Ear Infirmary, the New York Polyclinic Hospital, Hudson Street Hospital and Marine Hospital, also in my private practice. At the annual meeting of the A. M. A. held in 1919 I said (2) that a dirty mouth was one of the greatest menaces to the human race. I wish now to reaffirm and confirm that statement. We must make no mistake about oral sepsis, as it is the arch enemy of the ophthalmic surgeon. The germs themselves and toxins or their poisonous products must be eliminated from the system as far as lies in our power, if we are to better our cataract results. In this way, we can hope to reduce the amount of secondary postoperative infections. If we clean the blood by getting rid of toxemia, then we will raise the resistance of our patients, so that we can approach the operation with a confidence and courage such as we have not had in the past.

We must bear in mind that the longer toxemia exists, the less nerve energy and resistance there is.

All of this work on focal infections must be done from two to three months beore the patient is admitted to the hospital. We lay great stress on this work, as we must study the general condition of patients more than we have done in the past. A Wassermann test is made in zonular and complicated cataracts, also in all senile and juvenile cataracts. The urine is examined several times previous to the operation, and the height of blood pressure must be known.

Second step.—The patient is then admitted to the hospital. Twenty-four hours before the operation a dose of castor oil is given, as nothing sweeps and cleans the intestinal tract like castor oil. It has been the standby of physicians since time immemorial; I know of no substitute for it.

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Third step.—One hour before the operation a smear of the conjunctival sac is taken, after which two drops of a one per cent. solution (five grains to an ounce of distilled water) of silver nitrate are instilled into each eye. The silver produces an irritation, but not an inflammation, so that when the patient comes to the operating table the eyes look red and inflamed, with a certain amount of mucus at the inner corners. The brow, the eyelids, and adjacent skin are washed thoroughly with castile soap and water, and the eyes are then washed out with a normal salt solution as a means of freeing the operating field of mucus, dust, etc. While the eye is undergoing cocainization it is bathed continually in a twenty-five per cent. solution of fresh argyrol. In other words, every time a drop of cocaine solution is used in the eye, a drop of twenty-five per cent. solution of argyrol is instilled. The slogan is "drop for drop." We have been using novocaine (two per cent. solution) paralysis of the orbicularis as a routine for the last four years, and regard it as a great advance in the technic of extraction.

Recently for paralyzing the eyelids, we have followed Robinson's (3) technic and have found it most efficacious. Also it is imperative to have your assistants wear sterile rubber gloves. After the patient is well under the local anesthesia, the operation is performed. We always try to get a large conjunctival flap, after which we now use as a part of our regular routine Berens's (4) untied suture in senile and juvenile cataracts. Our usual technic is then employed. Afterwards we use two drops of three per cent. solution of atropine, and twenty-five per cent. solution of argyrol, after which both eyes are bandaged for forty-eight hours. The bandage is then removed and the eyes are dressed. One drop of three per cent. solution of atropine and one drop of twenty-five per cent. solution of fresh argyrol are instilled into the operated eye. At this first dressing (forty-eight hours after the operation) the patient is given the use of the unoperated eye and only the operated eye is bandaged. Also, the patient at this first dressing is allowed to sit up in a chair. Freeing the unoperated eye of a bandage as soon as possible helps to prevent socalled cataract delirium. At the end of four days the dressing is left off entirely and only a cataract mask is worn. Generally atropine is stopped at the end of four days, but twenty five per cent. solution of fresh argyrol is now used three times a day, until the patient leaves the hospital.

OPERATIONS PERFORMED IN FIFTEEN HUNDRED CASES OF INTRAOCULAR DISEASE.

No. of Cases	*Diagnosis*	*Smear*	*Operation*
10	Chronic glaucoma	Pus, mucus, large diplococci	Lagrange
145	Immature and mature senile cataracts	Negative	Prelim. iridectomy
50	Mature senile cataracts	Epithelium, K.L.B.	Prelim. iridectomy
125	Mature senile cataracts	Leucocytes, large and small diplococci	Prelim. iridectomy
75	Mature senile cataracts	Pus, leucocytes and mucus	Prelim. iridectomy
55	Glaucoma	Negative	Iridectomy
25	Acute glaucoma	Pus, pneumococci, mucus	Iridectomy
25	Old iritis	Mucus, leucocytes, no bacteria	Iridectomy
20	Occluded pupil	Negative	Iridectomy
10	Anterior synechiæ	Negative	Iridectomy
30	Chronic glaucoma	Negative	Lagrange
5	High myopia	Negative	Linear extraction
20	Chronic glaucoma	Pus cells, mucus	Trephine
15	Capsular cataracts	Occasional diplococci	DeWecker's
15	Secondary cataracts	Pus cells, mucus, bacteria	DeWecker's
10	Postpolar cataracts	Mixed germs, diplococci	Discission
20	Zonular cataracts	Negative	Discission
10	Zonular cataracts	Pus cells, mucus, bacteria	Discission
30	Secondary cataracts	Negative	Discission
30	Secondary cataracts	Mucus, leucocytes	Discission
5	Buphthalmia	Leucocytes, large diplococci	Iridectomy
20	Traumatic cataracts	Negative	Linear extraction
10	Traumatic cataracts	Leucocytes, cocci	Linear extraction
10	Juvenile	Xerosis and diplococci	Linear extraction
10	Zonular cataracts	Negative	Linear extraction
20	Traumatic cataracts	Small, large diplococci	Linear extraction
20	Congenital cataracts	Negative	Linear extraction
5	Morgagnian cataracts	Mucus, pus, diplococci	Extraction
170	Mature senile cataracts	Negative	Extraction
25	Mature senile cataracts	Pus cells, no bacteria	Extraction
75	Mature senile cataracts	Leucocytes, occasional coccus	Extraction
10	Mature senile cataracts	Mucus, bacteria, leucocytes	Extraction
30	Mature senile cataracts	Epithelium, pseudo K. L. B.	Extraction
20	Mature senile cataracts	Much mucus, no bacteria	Extraction
20	Mature senile cataracts	Mucus, diplococci, pus cells	Extraction
40	Mature senile cataracts	Leucocytes, no bacteria	Extraction
40	Mature senile cataracts	Mucus, staphylococci	Extraction
50	Mature senile cataracts	Pus, pneumococci, mucus	Extraction
5	Mature senile cataracts	Mucus, leucocytes, no bacteria	Extraction
10	Mature senile cataracts	Mucus, few cocci, no pus	Extraction
20	Mature senile cataracts	Leucocytes, large and small diplococci	Extraction
20	Mature senile cataracts	Pus, mucus, leucocytes	Extraction
20	Mature senile cataracts	Mucus, large and small diplococci	Extraction
20	Dislocated lens	Mucus, leucocytes, bacteria	Extraction
30	Complicated cataracts	Pus cells, mucus, bacteria	Extraction
14	Cyst of iris	Negative	Iridectomy
6	Detachment of retina	Negative	Trephine
50	Mature senile cataracts	Xerosis and diplococci	Extraction

SUMMARY

If we are to improve our cataract results and have fewer postoperative infections, we must "start at the bottom and not at the top." It is just as necessary for the ophthalmic surgeon to "clean house," as it is for the general surgeon.

1. The arch enemy of the ophthalmic surgeon is oral sepsis. Patients must stand the acid test for focal infections, the "three T's" (teeth, tonsils and toxemia), before we will consider the operation. This applies to all patients except emergency cases. Wells, before the New England Dental Society, called attention, in no uncertain manner, to the importance of going after oral and focal infections before attempting operations where the eyeball is opened.

2. We wish to express strong faith in silver nitrate and argyrol as germicides and irritants. In all of these fifteen hundred cases, one per cent. silver nitrate was instilled into the eye one hour before the operation, and twenty-five per cent. solution of argyrol was used at the time of operation; in fact, the eye was bathed in argyrol during cocainization.

3. In analyzing our fifteen hundred cases, we have three secondary infections coming on nine days after the operation. One of these patients recovered and has fifty per cent. vision; chronic iridocyclitis developed in the other two. These patients had negative smears. We were able to trace these infections to faulty technic in reference to oral sepsis.

4. Cases I and II occurred in the same patient.

His smear showed pus and diplococci, mucus; there was also chronic dacryocystitis. The patient had chronic glaucoma with very little vision. I performed a Lagrange operation without bringing the tension down; in two weeks, another Lagrange operation was performed. No infection followed either of these operations. Doctor Stout was house surgeon at the time and assisted.

5. Vitreous humor was lost in twenty cataract cases. In Case No. 55, a bead of vitreous humor appeared. The smear contained pus and a number of diplococci. No infection resulted. Case No. 167 was a bad case of ozena; smear showed pus cells and staphylococci. There was no infection. An iridectomy was performed in Case No. 280, after which a secondary membrane was removed. Some vitreous was last; smear showed considerable mucus and a few leucocytes and occasional diplococcus. There was no infection. In Case No. 391, an iridectomy and capsulectomy were performed; Vitreous was lost; the smear showed pus, diplococci and mucus and no infection resulted. Case No. 518 presented a dislocated lens. Iridectomy and extraction of the lens were performed; considerable vitreous was lost in this case; the smear showed a few leucocytes and some bacteria—no infection resulted. In Case No. 799, there was ozena; smear showed lecocytes and large diplococci—no infection resulted. In Case No. 897, the patient squeezed and lost considerable vitreous. The smear showed epithelium and pseudo K. L. B.—no infection resulted.

6. Case No. 1150.—Mr. H., aged sixty-eight, with mature senile cataract, was referred to me by Dr. Emil Mayer. This patient had been troubled for years with an obstruction of the nasal duct. Probes had been passed into the duct from time to time. The canaliculi were still open, but no pus could be squeezed out of the sac. He had angina pectoris and would not submit to extirpation of sac. Dr. Mayer and I decided to undertake the extraction of the cataract with an extra dose of silver. One per cent. silver nitrate solution was used in his eye at 9 a.m. and again at 12 o'clock and the eye was bathed in argyrol at the time of cocainization. At 2 p.m. the operation was performed, the patient sitting up in a chair on account of his heart. His eye was dressed every twenty-four hours on account of his lacrimal trouble. He got a beautiful eye with 20/20 vision. The smear in his case, before the silver was instilled, showed pus cells, diplococcoci and mucus. But for its "watery" condition, the eye looked clinically clean. Dr. Robb was house surgeon on my division at the infirmary and assisted me in this operation.

Case No. 1200 was a similar case in a woman, aged sixty, with lacrimal trouble of long duration. Her smear was negative and her eye looked clinically clean. I operated upon her as I did on Mr. H., using silver nitrate one per cent at 9 a.m., and again at 12 o'clock, and extracting the cataract at 2 p. m. Her eye was also dressed every day. Halpert was house surgeon at the time and assisted me.

Case No. 1450 was Dr. Vandegrift's case. Briefly, it was a cataract case with chronic trachoma; smear showed pus and diplococci. In this case one per cent. silver was used for three days previous to the operation; at the time of the operation the smear was free from pus cells but showed diplococci; the cataract was removed by Dr. Vandegrift; no infection. This was the only eye the patient had. Four weeks later, on account of soft lens substance remaining, Vandegrift opened this eye again with a keratome and washed out the débris, using my method before operation; no infection followed and patient now has 20/70 vision.

I mention Cases No. 1, 2, 1150, 1200 and 1450 especially to prove to you the great power silver nitrate and twenty-five per cent. solution of argyrol have as practical specifics against infection. Of course, I am not advocating operating upon every cataract case that comes along in which the patient has serious trouble with the lacrimal apparatus without first performing an excision of the sac. But I do think, if the eye looks clinically clean and no fluid or secretion can be squeezed out of the sac, and one per cent. silver nitrate is used twice in the eye, and at four hour intervals, and the eye bathed in argyrol at the time of the operation, it is perfectly safe to operate. Investigations made by Elschnig and Lindner have proved that in the great majority of cases the conjunctival sac contains the pathogenic organisms, and with proper technic, all other sources of infection can be excluded.

7. In juvenile and lamellar cataracts, we perform a peripheral linear incision with a conjunctival flap just back of the limbus. Also in all discissions, we enter the anterior chamber through the conjunctiva and sclera, just back of the limbus. The same rule applies to senile cataracts; we make the section in the sclera just behind the limbus, always having in mind a conjunctival flap. We consider it obsolete to go through the cornea in performing discissions on zonular, juvenile and capsular cataracts. Why attack the eye at its weakest point? The chances for infection are greatly increased by using the corneal route. Lindner (5) has shown that pneumococci are often present on the cornea of both the old and the young and calls attention to the relatively greater incidence of infection in discission operations done through the cornea. The last statistics, in the literature on this point, given by Asmus of Berlin, showed an infection percentage of five per cent. for corneal discissions and for discissions through the sclera, a percentage of 0.3 per cent. in two hundred and ninety five cases.

8. In our list of fifteen hundred cases we operated upon six hundred and ten senile cataracts, ninety soft cataracts and thirty complicated cataracts, making all told seven hundred and thirty cataracts removed, with two eyes lost from secondary infections coming on nine days after the operation. Not a single case of primary infection or panophthalmitis resulted. In the last eleven hundred intraocular cases in which operation was performed, we have not had even a single late infection. We performed one hundred and twenty-five discissions on soft and secondary cataracts, five hundred and thirty iridectomies, forty Lagrange and twenty-six trephine operations, thirty DeWecker and twenty-four miscellaneous operations without infection. It is interesting to note that the ages of our patients ranged from two months to ninety years. Twelve of our patients with cataract had three per cent. sugar in the urine. Sugar is no barrier to the operation unless it exceeds four per cent.

Duane (6) in speaking of my method, calls it "artificial preoperative leucocytosis" and he further adds: "The good results obtained by this practice in the eye operations seem well substantiated by statistics and the translator believes that it is based on sound theory."

ACTION OF SILVER NITRATE AND ARGYROL

Lindner (5) has the following to say: "The mechanical removal of the dead or degenerated surface epithelium is facilitated by preoperative instillation of silver nitrate, while the postoperative instillation of fresh argyrol inhibits the growth of microorganisms in the first twenty-four hours." In other words, the argyrol "carries on" the work which was begun by the silver nitrate. They go hand in hand in making war on the saprophytes of the conjunctival sac and the cornea which are the organisms responsible for intraocular infections. Also, argyrol is especially good to prevent low grade septic invasion through a wound kept open by a prolapse of vitreous.

I know that silver nitrate and argyrol furnish a marked degree of stimulation to the conjunctiva and in that way leucocytosis is produced. They promote phagocytosis and the formation of antibodies, and in this way put the tissues into a stronger state of defense against the invasion of microorganisms. Even were an inflammation produced by the silver and argyrol, it would only diminish the probability of infection, not increase it, because the leucocytes and their leucins are valuable aids in combating bacteria. And what makes the phagocytes so active? It is the preoperative removal of foci of infection—going after the "three T's."

The thought has occurred, however, that this preventive effect of the silver salt may be, at least in part, due to the germicidal action of the silver, and in order to shed more light on the subject a series of fifty cases have been investigated by Dr. S. P. Oast and Mr. E. B. Burchell in the laboratory of the New York Eye and Ear Infirmary.

The following technic was employed on the patients admitted to the infirmary: A culture was taken from the conjunctiva; then several drops of freshly prepared silver nitrate in one per cent. solution were instilled into the lower conjunctival cul-de-sac, and the eye left unprotected by a dressing of any sort; after a lapse of two hours, just before the operation, a culture was again taken in the same manner.

The material was collected by means of a small platinum loop from the lower conjunctival cul-de-sac,

BACTERIOLOGICAL STUDIES

No. of cases examined	*Before*	*After*
Three	Diplococci	No growth
Three	Diplococci and xerosis	No growth
Four	Xerosis	No growth
Five	Staphylococcus	No growth
One	Subtilis bacillus	Staphylococci
One	Xerosis and diplococci	Xerosis and diplococci
Four	Staphylococcus	Staphylococcus
One	Xerosis and staphylococcus	No growth
One	Xerosis	No growth
One	Streptococcus and staphylococcus	Staphylococcus
One	Xerosis	Xerosis
No growth	No growth	No growth

care being taken to avoid contamination with the lids and cilia. This was transferred after the usual manner to agar starch which was incubated at 37° C. for twenty-four hours and then examined.

In the present series, in cultures taken two hours after the use of silver, in every case, a point was made of obtaining some of the stringy purulentlike masses such as are familiar to all who have observed the effect of silver solution in the eye, and it was extremely interesting to observe that the cultures obtained in this way invariably yielded no growth, or a considerably diminished number of colonies. In addition to argyrol and silver being powerful bactericides, I am strongly of the opinion that they increase the phagocytic power of body cells in and around the eye, producing a leucocytosis and leaving the eye protected during the healing process.

PREPARATION OF THE SILVER AND THE ARGYROL

The one per cent. solution of silver nitrate (five grains to one ounce distilled water) should be made up fresh at least every three months, and must be kept in a dark glass stoppered bottle. The rays of light cause the silver solution to become inert, and for that reason it should also be kept in a dark room.

The twenty-five per cent. solution of argyrol must be made up fresh for each operation. Unless you have a very reliable chemist, it is better for the surgeon to make up the argyrol solution himself.

Professor P. Knapp (7) makes several observations concerning the use of silver nitrate. First, he refers to the instillation of one per cent. to two per cent. nitrate immediately before the operation. The point of using the silver two hours before the operation, which is most important, he has overlooked. The two hour interval gives the silver time to destroy bacteria and produce a leucocytosis.

His second objection is that the silver increases secretion with many bacteria. Our research work at the New York Eye and Ear Infirmary shows that the silver does increase the secretion but cultures of the stringy, purulent like masses showed that they invariably yielded no growth or a considerably diminished number of colonies. In other words, two hours after the instillation of the one per cent. silver nitrate in the eye, cultures from the secretion of cul-de-sac showed the absence of the bacteria in eighty-two per cent. of the cases, whereas, before the silver was instilled, the cultures were positive in sixty per cent. of the cases. If Professor Knapp will use my method with an open mind, I feel that he will be pleased with the results. Certainly the clinical results are overwhelming.

I want to express my thanks to the house staff of the infirmary for their cooperation and assistance, and to express my thanks and great appreciation to Oast and Burchell for their excellent research word.

In addition to these fifteen hundred cases, R. C. Heflebower, of Cincinnati, reports five hundred intraocular operations performed according to my method without a single primary or secondary infection. Heflebower feels such a sense of security with the silver nitrate that he now no longer takes smears or cultures, reliance being placed in the efficacy of the preparatory treatment, and he adds, "The results have been most happy."

PRELIMINARY IRIDECTOMY IS OF PRIME IMPORTANCE IN ALL CATARACT OPERATIONS

1. It is much safer for the patient's eye and better for the surgeon in the long run.

2. It protects the eye and leaves it stronger for the years to come.

3. If it is the safe procedure when a patient has one eye, why is it not a good thing when he has two?

4. Doing preliminary iridectomies in my clinics and in my private practice have become a hard and fast rule with me. This rule applies to all cataracts. It enables me with safety to the eye to do all my operations just back of the limbus. I feel that it is a great mistake to use the corneal route in doing operations where the eyeball is opened.

5. Some operators and a few patients raise the objection to iridectomy on account of the necessity of making two trips to the hospital and because the danger of infection is doubled.

W. F. Hardy (8) says, and he is quite correct, that the operator raises these objections in his own mind much oftener than does the patient, and he adds, "If an ophthalmologist is thoroughly convinced that a certain line of action is the correct one, he will have little trouble in putting that conviction over to the patient and gaining his consent." As far as the extra chance for infection is concerned, we feel that we have been able to eliminate that argument.

6. We agree with Darrier and Hardy who are strong advocates of preliminary iridectomy.

7. I firmly believe that postoperative infection in the eye surgery is a preventable disease.

8. If you want every cataract operation to be successful, then use my technic, and a preliminary iridectomy. I hold and believe that it is the only way to get a good surgical result in every case. These are the conclusions that I have reached after doing cataract work for over twenty years.

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Acute Infectious Mononucleosis*

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There is some evidence to indicate that the disease described by Pfeiffer (1) as glandular fever is in many respects analogous to the infection described by Sprunt and Evans (2) and by Blaedorn and Houghton (3) as benign lymphoblastosis. The infection was described by Longcope (4), who cited ten cases and gave a comprehensive review of the literature up to 1922. Though this condition is ordinarily regarded as moderately rare—at least in adolescents and adults—there appeared to be a greater prevalence of the infection in Philadelphia during the spring and summer of 1924. Of six cases noted in adults and adolescents, we have selected one which was observed at greater length and which presented most of the characteristic features of the disease. The descriptions by the authors cited above cover the subject thoroughly and a brief outline of the clinical course will here suffice.

The disease occurs in young adults or adolescents with a predilection for males. The onset is gradual with fever, malaise, headache (which may be severe), injection of the throat and at times a slight cough. The fever is remittent and moderate, 101° F. or less, but in some instances reaches 104° or 105°. After these rather vague manifestations have existed from one to two weeks, a general lymphadenopathy ensues and the spleen becomes palpable. The spleen may ocasionally be palpable prior to the appearance of the lymphadenopathy. The leucocyte count, which in the early stages may have been low, normal or slightly above normal, increases, due mainly to a relative and absolute increase of the lymphocytes, monocytes and certain abnormal forms which are described in more detail further on. Abdominal soreness in the umbilical and spleen region is fairly frequent. At times a scanty papular eruption appears on the abdomen or thorax, distantly resembling rose spots. The course of the disease may be from ten to fifty days; this constitutes one of its most variable features. The temperature remains slightly elevated with intermissions to normal even after the lymphadenopathy has to a large measure subsided. Occasionally the disease may exist in epidemic or endemic form. Such an occurrence is described by Tidy (5), who cites an outbreak of twenty-four cases in a school for boys in England.

The nature of the lymph node enlargement requires further elucidation. Usually all the lymph nodes accessible to palpation are found to be enlarged to about thumbnail size or slightly larger, though they never take on the dimensions of those seen in Hodgkin's disease, lymphosarcoma or lymphoid leucemia. The lymphadenopathy may be confined to the nodes behind the angle of the jaw. The nodes are discrete and tender. Their histopathology has been derived from biopsy studies, since recovery was the rule in the reported cases. On microscopic examination there are distortion and even loss of the normal architecture of the lymph node; the lymph sinuses are found distended and in these are found large cells with oval pale staining nuclei. There is frequently lymphoid hyperplasia and polynuclear

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neutrophile and transitional cells are noted. When, occasionally, eosinophile cells are found, the process may remotely resemble Hodgkin's disease, though the absence of giant cells or Dorothy Reed cells is noteworthy. However, cells of great size containing a single nucleus have been described in some of these lymph nodes.

The blood picture furnishes the most curious feature of the disease. The onset may be ushered in with a leucopenia or the total white cell count may be normal or slightly increased. The lymphocyte count may be noted even at this time to be relatively increased. During the period of enlargement and during the subsidence of the lymph nodes, the total count increases up to 20,000, with the lymphocytes and monocytes as high as fifty to eighty per cent. of the differential count. The cells of the large lymphocyte group make up the greater proportion of the increased lymphocyte count. There are in addition abnormal forms with finely reticulated purplish nuclei and large areas of deep blue cytoplasm. Some of these also resemble Turk's irritation forms. None of these apparently abnormal forms shows granules with the oxydase stains.

The abdominal pain noted in this disease may be caused by several factors. There is usually pain in the left hypochondrium due to the enlarging spleen. There is pain possibly from mesenteric lymph node enlargement and may be the origin of the pain localized by the patients to the umbilical region or to one side of it. In one patient, a young adult female, there was typical appendiceal pain which may have been due to increase in the lymphoid follicles of the appendix or mesenteric lymph node enlargement. Hemorrhagic nephritis is an occasional complication.

Case.—M. J. C., a white male, aged thirty years, whose previous medical history was uneventful, began on May 30, 1924, to suffer from headache, feverishness and lassitude. Constipation was noticeable in the next few days and was unaffected by self-medication with purgatives. He was admitted to the hospital on June 7th, with a temperature of 100° F. and at this time complained of a severe headache and slight abdominal pain; there was no vomiting. A slight injection of the throat was present; no cardiac or pulmonary abnormalities; blood pressure was 110 systolic and 80 diastolic. At this time there was no lymphadenopathy, nor was the spleen palpable. A slight cough began on June 8th. The leucocyte count was 4,700 on June 9th.

June 15th: Headache severe; no rigidity of the neck; no diplopia; no definite Kernig's sign; all deep reflexes were exaggerated. The throat was markedly injected and a short dry cough was noted. The lungs presented no abnormalities; a faint systolic murmur was heard at the mitral area. The spleen was definitely palpable and a few papules somewhat resembling rose spots were present on the lower chest. The leucocyte count was 5,800 on June 16th and the differential count is noted in the tabular outline of the blood picture. Abnormal lymphocytes similar to those described above were noted in the differential counts in the proportion of four to eight per cent. Agglutination tests for Bacillus typhosus, paratyphoid A and B were negative. The blood culture taken on June 13th was sterile and remained so after two weeks. The urine was practically normal with the exception of a trace of albumin.

June 17th: The lymph nodes of the posterior cervical chain became enlarged to approximately one cm. in diameter and involved the occipital and retroauricular nodes. Epistaxis was noted and also abdominal pain to the left of the umbilicus.

June 21st: Headache and somnolence were recorded. A marked lymphadenopathy was present involving the posterior and anterior cervical groups. The epitrochlear and inguinal nodes were enlarged to the size of almonds. The spleen was palpable and tender. The next day (June 22d), the lymph nodes below the clavicles, left axillary, and many suboccipital nodes were enlarged. The lungs were clear. There was a faint mitral systolic murmur. Agglutination tests for Bacillus typhosus, paratyphoid A and B were repeated with negative results.

About June 24th, the lymph nodes appeared slightly smaller. On July 29th, the spleen was barely palpable and the lymphadenopathy had entirely receded with the exception of a palpable submental node. The temperature curve though protracted was not unduly high. From June 11th to June 21st the temperature did not reach normal, the evening temperature ranging from 100° to 102° F. and the morning temperature about 99° F. The temperature became intermittent about June 21st and gradually came down to approximately 99° F. from July 9th to July 12th. Constantly normal temperature was reached July 24th. The febrile course was therefore one of about fifty-five days. There was complete clinical recovery up to the present writing, one year later.

TOTAL AND DIFFERENTIAL LEUCOCYTE COUNTS

	June 9th	*June 13th*	*June 16th*	*June 19th*	*June 21st*	*June 28th*	*July 8th*
Total leucocyte count	4,700	4,600	5,800	7,800	7,300	9,300	8,100
Neutrophiles (per cent.)	49	53	..	59	52	40	35
Lymphocytes (1)	40	27	..	35	38	49	62
Monocytes (2)	11	17	..	4	8	11	3
Eosinophiles	..	3	..	2	2	..	..

1. Includes four to eight pathological lymphocytes in practically all the counts. 2. Includes mononuclear and transitional cells.

In addition to the laboratory tests mentioned previously there were two negative Wassermann reactions. Cultures of urine and stools were negative for the typhoid and paratyphoid group. Though a number of symptomatic and empirical remedies were used, without any particular influence on the course of the disease, it is possible that sodium cacodylate may have had some beneficial effect.

SUMMARY

1. An outline of the characteristic features of acute infectious mononucleosis, is given.

2. The history of a patient with this infection, is cited. The course was one of a febrile illness of fifty-five days, with vague onset; later universal lymphadenopathy, splenic enlargement and lymphocytosis. Recovery was complete with regard to the lymphadenopathy and splenic enlargement; the blood count remained abnormal at the time of discharge.

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Spring Hay Fever, Its Causes and Preventive Treatment

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Vernal or spring hay fever is caused chiefly by the pollens of grasses, particularly sweet vernal grass, June grass (blue grass), orchard grass, timothy and redtop. In the Southern and Pacific states, Bermuda grass and Johnson grass are also important factors. Of minor importance are the pollens of trees, especially oak, ash, cottonwood (poplar), and black walnut; also plantain, sheep sorrel and yellow dock pollens.

The date when hay fever symptoms begin will vary somewhat in different sections of the country, being dependent upon the flowering periods of the hay fever plants which in turn are governed by climatic conditions. The time of bloom of the spring hay fever plants is indicated in the following table:

Fig. 1.—June grass. Fig. 2.—Orchard grass. Fig. 3.—Redtop. Fig. 4.—Timothy.

Cottonwood, poplar	(Populus macdougali)	March to April
Oak	(Quercus alba)	March to May
Ash	(Fraxinus species)	March to May
Black walnut	(Juglans nigra)	March to May
Sweet vernal grass	(Anthoxanthum odoratum)	April to July
Orchard grass	(Dactylis glomerata)	April to August
Plantain	(Plantago lanceolata)	April to October
Sheep sorrel	(Rumex acetosella)	May to July
Yellow dock	(Rumex crispus)	May to July
June grass, blue grass	(Poa pratensis)	May to September
Bermuda grass	(Capriola dactylon)	May to September
Timothy	(Phleum pratense)	June to August
Redtop	(Agrostis palustris)	June to September
Johnson grass	(Sorghum halepense)	June to October

HARMLESS PLANTS AND TREES

The fact that true hay fever is caused by the inhalation of wind borne pollens only, eliminates a long list of insect pollinated plants and trees which are popularly supposed to cause hay fever. These insect pollinated plants comprise alfalfa, aster, chrysanthemum, clover, crimson rambler, dahlia, dandelion, goldenrod, honeysuckle, jonquil, lilac, lily of the valley, mountain laurel (rose bay or oleander), roses, rose of Sharon, spirea, sugar beet, sunflower, white daisy and yellow daisy.

The insect pollinated trees which are harmless in hay fever include the common fruit trees (apple, apricot, peach, pear, plum) and most of the ornamental flowering trees, such as catalpa, crepe myrtle, dogwood, locust and magnolia (1). Moreover, Scheppegrell states that several trees whose pollen is wind borne are negative in hay fever, including the arbor vitæ, cypress, fir, hemlock, pine and spruce.

Hay fever in the late spring and early summer is often erroneously designated rose cold or rose fever. Such a name is a misnomer, for hay fever at this time of year is not caused by rose pollen but by pollen from the grasses.

There are certain insect pollinated plants whose pollen will undoubtedly produce hay fever symptoms if directly inhaled, but such pollens are never found in the air in any great quantity and so are practically not a factor in the hay fever situation. The pollen of insect pollinated plants may precipitate an attack of hay fever under exceptional circumstances—such, for example, as where the flowers are deliberately smelled as might be done particularly by children, or where the plants are grown in great profusion in close contact with the patient, or even in some cases where the flowers are used for room decoration. But such symptoms would not long persist.

Fig. 5.—Catkins of oak (Quercus alba).

Fig. 6.—Blossoms of ash (Fraxinus species).

DIAGNOSTIC TESTS

Scientific workers have devised a simple skin test which will definitely determine the particular pollen to which the hay fever sufferer is sensitive. Before he can rationally treat hay fever, the physician should familiarize himself with those pollens which are prevalent in the vicinity where the patient lives; and he should ascertain the usual date of the patient's hay fever attack, so that he may intelligently select the proper pollens to use for the test. Only those pollens known to be in the atmosphere at the time when the patient experiences the most severe hay fever symptoms need be used for the skin tests.

Pollens which are the cause of the patient's hay fever will produce usually within thirty minutes a white, raised area of the skin which looks like a hive or mosquito bite and which is called an urticarial wheal. This wheal may be as large as one inch to two inches in diameter, but more often is about five eighths of an inch and is usually surrounded by a zone of redness. The greater the irregularity in outline of the urticarial wheal, the greater is the sensitiveness of the patient to that particular pollen. Thus, an urticarial wheal with pseudopods (irregular, radiating portions), is more significant than a wheal of regular outline without pseudopods.

Fig. 7.—Catkins of black walnut (Juglans nigra).

Several skin tests should be made, using those pollens which are known to be most prevalent in the atmosphere at the season when the patient experiences the most severe hay fever symptoms. If the patient is affected by several pollens (as indicated by positive skin reactions produced by more than one pollen), the size of the reactions will distinguish between pollens that affect the patient only slightly and those that are harmful and are responsible for the hay fever symptoms.

Treatment should be given with that pollen which gives the largest sized reaction in the skin test. However, the experience of Scheppegrell (2), Walker (3), Goodale (4), Piness (5), Bernton (6), and others (7) has shown that when a person is sensitive to the pollen of one variety of grass, he will react more or less positively to other varieties of the grass family. Therefore, when the degree of reaction from the common grass pollens is approximately the same, a combination of such pollens may be used as a logical treatment for spring hay fever.

GLYCEROLATED POLLEN ANTIGENS

To Koessler (8) must be given the credit for placing the method of desensitization against hay fever on a scientific basis. He emphasized the fact that aqueous pollen extracts are not stable and rapidly deteriorate in potency after three or four weeks. The observations of Koessler have since been amply confirmed (9).

In 1914 a stable and standardized glycerolated pollen antigen (10) was perfected and the medical profession was thus afforded for the first time a practical means for the scientific treatment of hay fever patients. The glycerolated pollen antigens are prepared in stable solution by extracting the mature pollen grains in sixty-six and two thirds per cent. glycerol and thirty-three and one third per cent saturated sodium chloride solution. Such glycerolated pollen antigens have proved to be remarkably stable and more potent than those obtained by any other method of extraction yet described.

It has been clinically demonstrated that hay fever can in many cases be prevented or alleviated by preseasonal treatment with the glycerolated pollen antigen prepared from the pollen to which the person is sensitive. In 1922 I reported (11) an analysis of 1,578 cases of hay fever treated by physicians in all sections of the United States who had used the glycerolated pollen antigen during five consecutive years. This analysis showed an average protection or relief from symptoms of hay fever in eighty-four per cent. of cases with a remarkable uniformity of favorable results each year in every locality. Subsequently Bernton (6), special expert of the United States Public Health Service, published a very complete description of the most successful methods of treating hay fever. He found satisfactory the method used for the preparation and standardization of glycerolated pollen antigens. His experience in the use of these antigens in the treatment of hay fever is confirmatory of my observations.

FIG. 8.—Catkins of cottonwood

POLLEN TREATMENT

Having determined by diagnostic skin tests the pollens to which the person is sensitive, preseasonal treatment is carried out by giving a series of doses of the glycerolated pollen antigen prepared from the corresponding pollen that gave the maximum positive reaction in the test. As already pointed out, however, if the skin reactions from the grass pollens are approximately of the same intensity, an antigen prepared from a mixture of such pollens may be used for treatment. The antigen is administered subcutaneously, preferably in the arm over the insertion of the deltoid muscle.

The object of the pollen treatment of hay fever is to produce a definite tolerance or desensitization to the pollen protein of such degree that the patient can tolerate any amount of air borne pollen as long as the pollen is in the atmosphere—that is, during the pollinating season of the plant.

For many years satisfactory results have been obtained in about eighty-five per cent. of cases by giving a series of fifteen doses of pollen antigen at intervals of forty-eight hours, starting the treatment about five weeks before the date of the expected attack of hay fever. In recent years, however, the tendency has been to make the pollen treatment of hay fever more intensive: first, by using much shorter intervals between doses than were formerly considered satisfactory; second, by using larger terminal doses; and third, by making the treatment both preseasonal and seasonal, continuing the high doses through the height of the pollinating season of the hay fever plant. This intensive form of treatment yields results that are even more satisfactory than those obtained by the former plan of using longer intervals: pollen tolerance or desensitization is brought about more rapidly, reactions are fewer, and a higher percentage of complete protection against hay fever symptoms is secured.

OUTLINE OF INTENSIVE TREATMENT

The intensive form of hay fever treatment is started about two weeks before the hay fever season, beginning with an initial dose of two and a half pollen units and progressively increasing the strength of the doses. For the first two or three days the doses may be given twice a day. After that a dose of pollen antigen is administered daily until a series of fifteen doses has been given. If any dose causes a marked local reaction which persists for twenty-four hours, the next dose is delayed for another day. By starting the intensive treatment two weeks before

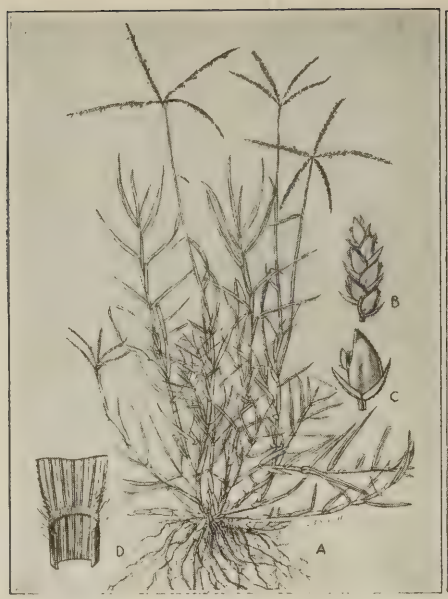

FIG. 9.—Bermuda grass.

FIG. 10.—Sweet vernal grass.

FIG. 11.—Johnson grass.

the hay fever season, a series of fifteen doses administered at daily intervals (or twice a day for the first few doses) can usually be completed by the time the hay fever season begins. Then four or five higher doses may be given at intervals of three or four days in order to give the patient the maximum protection during the height of the pollinating season of the hay fever plants. The terminal dose is two thousand or even three thousand pollen units.

Clinicians have found that by using this intensive method of treatment, the doses are as well if not better tolerated than when longer intervals between doses are used. The intensive form of pollen treatment in which the doses are given once or twice daily has been favorably reported by Brown (12), Bernton (13), and Kahn and Grothaus (14). In comparing the intensive treatment with the previous method of using longer intervals, Kahn and Grothaus state: "It is our experience that the twice a day or daily method of giving treatment which we have used for the first time this year is far more satisfactory to all concerned. . . . Reactions seem to us fewer by this method, and tolerance far more rapidly secured, and relief to seasonal cases is infinitely more prompt."

SUMMARY AND CONCLUSIONS

1. Spring hay fever is caused chiefly by pollens of the grasses, the more important ones being sweet vernal grass, June grass, redtop, orchard grass, timothy, Bermuda grass and Johnson grass. Of minor importance are the tree pollens (oak, ash, cottonwood and black walnut), and the pollens of plantain, sheep sorrel and yellow dock.

2. Diagnostic skin tests should be applied to determine which pollens are the cause of the patient's hay fever symptoms. Only those pollens known to be in the atmosphere at the time the patient experiences the most severe hay fever symptoms need be used for the skin tests.

3. Glycerolated pollen antigens, prepared by extracting the mature pollen grains in sixty-six and two thirds per cent. glycerol and thirty-three and one third per cent. saturated sodium chloride solution, have proved remarkably stable and more potent than those obtained by any other method of extraction yet described.

4. It has been demonstrated clinically that the use of glycerolated pollen antigens affords a high degree of protection against hay fever symptoms.

5. The intensive treatment comprises much shorter intervals between doses than were formerly used; larger terminal doses; and continuing the high doses through the height of the pollinating season.

6. The intensive form of pollen treatment is started about two weeks before the hay fever season. For the first two or three days doses may be given twice a day. Then a dose of pollen antigen is administered daily until a series of fifteen doses has been completed, usually about the time the hay fever season begins. Four or five higher doses are then given at intervals of three or four days to give the patient the maximum protection during the height of the pollinating season.

7. Beginning with an initial dose of two and a half pollen units, the doses in the intensive treatment are progressively increased in strength up to terminal doses of two thousand or three thousand pollen units.

8. The intensive plan of pollen treatment possesses certain distinct advantages: a, pollen tolerance or desensitization is brought about more rapidly; b, reactions are fewer; c, and a higher percentage of complete protection against hay fever symptoms is secured.

9. The method herein described of giving intensive treatment with glycerolated pollen antigens each year before the hay fever season and continuing into the hay fever season seems to offer the best means for the prevention of hay fever.

10. It is no longer necessary to forsake one's business during the hay fever season and journey to a so-called hay fever resort. Intensive treatment with glycerolated pollen antigens now affords hay fever sufferers practically complete protection, so that they can continue to transact their business in their accustomed surroundings.

The author's references will appear in his reprints.

A Psychoanalytic Introduction to a Study of the Conduct Disorders of Lethargic Encephalitis*

With Outline of Plan for Psychosocial Reconstruction

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(*Continued from page* 598)

That the ego organ is deeply wounded is shown by the oral and anal eroticism (sadism) which almost invariably obtrude themselves in every severely marked case of encephalitis. In mild cases the dejection and sadness cover, perhaps, the greater part of the clinical picture, but the awareness of destruction of the most highly estimated functions of the ego—the intellect, moral and esthetic sense, ability to create, etc.—must engender a feeling of impoverishment of the whole personal worth (the narcisistic libido). As we know, an equal mutilation of the peripheral system (such as the actual loss of one or more organs or limbs) may still permit the withdrawal of object libido to the ego, and the latter may absorb the bodily defect by the psyche compensating in other permissible activities, in philosophic resignation, humor, pride, defiance, and even scorn. But what may the ego cling to in the presence of gross injury to the very organ by which it operates these egoistic satisfactions, thereby losing its own self respect and self esteem? This is the problem of the poor encephalitic, wrecked in both body and mind structures by which we may equilibrate a changed outer world, or better still, an ego no longer able to adapt to the former outer conditions.[1]

From psychoanalytic teachings we all know that one is born with the biological expectation of unconditional omnipotence, to which a wish free existence within the mother promised. The care and attention which is given to the new born child permits him in great measure to continue this feeling of allpowerfulness, especially if he adjusts to certain simple demands. Next he comes to the position of imagined omnipotence and later to the same condition which is accentuated by the use of certain types of magiclike movements and gestures which seemingly furnish a means of communication with the external world. Very soon, however, he comes to the stage of development of recognizing that certain factors in the outer world have limits. This has been outlined by Ferenczi (1) as a basis of his reality principle separating personal wishes and desires from uncontrollable reality. Cultural adaptations demand still more the renunciation of maintaining in an isolated form the narcisistic self and there is then a compulsive recognition of reality. The outer world then requires of the adult not merely that we take a logical view but that he shall assume an attitude of obedience to these realities, that he shall be attentive, prudent, wise, and at the same time moral and esthetic. Situations arise where he must behave with considerable selfsacrifice even to the point of great personal loss. This whole principle of development of the individual from the most primitive state to that most highly required by society does not occur spontaneously but really under the constant guidance of the repressive forces of society. Thus there takes place a continual procession of identifications with the social agents requiring repression, and withdrawal from such identifications and the formation within the individual of individual patterns of identifications which form the different selves aggregated in his own personality. In the course of this development the ego ideal continually demands more amplitude with renunciations of these identifications and it is, according to Freud, that ego nucleus which behaves as the subject which makes as the object of its criticism the remaining ego that is largely narcisistic and is the beginning of conscience, the censorship by which reality is tested, and the instinct of self regard, etc. Every new capacity which one attains means the fulfilment of an ideal and serves a practical benefit and enlargement of the ego, and a narcisistic satisfaction as well; there is an increase of the feeling of self and the enlargement of the ego stature which had been on the point of being greatly diminished through the unfulfilled ideal standards. A corresponding development can also be held for the object libido which also must pass through certain educational repressions and though it is not as severe and rigid a discipline it must learn to avoid at least gross defects in sexual adjustments, such as incest and certain perversions; therefore even the object love must be "just to the ego" and must conduct itself in accordance with the views and benefits of the narcisistic self respect. This is in brief a onesided consideration of certain developmental phases of the ego which are our immediate concern in the problem we have in hand with this acute narcisistic pathoneurosis of encephalitics.

If in the encephalitic injury certain specific structures are destroyed—which is as surely true as in the metaluetic process of paresis although entirely different structures may and indeed are involved —and if self observation sends report to the ego nucleus that bodily processes as well as important psychic functions have been enduringly damaged, the ego nucleus reacts in dejection and despair if not in an actual psychoneurosis. If, however, the adjustment cannot be made at this level, a deeper regression for outlet takes place and the most primitive and grossly forbidden activities are indulged in. If the ego ideal is able to surround itself by cultural education or enliven regressive memories into kinds of activities that furnish satisfaction, then the narcisism is well protected and the progressive decline of the patient's true value may no longer harm him. Hence one sees

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[1] I wish to acknowledge my indebtedness to the work of Hollós and Ferenczi on paresis which has enabled me to make my own views clearer in this individual problem of conduct disorders in post encephalitic children.

but comparatively few out of the large gross number of encephalitics who present enduring conduct disorders or even actual psychoses. In such either the previous ego development has been comparatively sound, or resilient to the ego organ injury, or the injury has not grossly wounded those structures which disable so profoundly the ego ideal. When, however, the lesion injuries those structures immediately subtending the psychic processes of conscious adaptations, the cortex and its thalamic subcortical structures, then the narcisistic libido creeps after these conditions even more regressively until the juvenile or even infantile behaviors are called into action. Nor are the final levels in ego development the only one showing in the behaviors of these encephalitics; all past stages of erotic and libido organizations are revived and placed in the sum total of behavior reactions. Our own cases show this. They are inclined towards incest, homosexuality, exhibitionism, desire for display, and sadomasochism in all degrees. It is as though this type of pathoneurosis, which in the course of development led towards the polar separations of development of the impulses between the ego centre (brain) and the genital, became retrogressive step by step. And the ego, purged of such socalled beautiful repressions through education, was again flooded with all the inhibited eroticism and the oral, anal and urinary polarities of infantile character once more become the integration of behaviors. Thus, the greater their deterioration, the more unrestrained and all powerful these encephalitics become. Hence we must continually envisage the constitutional factors to be determined by analysis, and the traumatic process and its degree of wounding of the developmental levels of the ego organ (the brain). The manner in which the psyche reacts to cerebral injury as well as toxins, how the ego and its libido complement the narcisism behaves under such circumstances, cannot longer be matters of indifference in the study of these cases.

We must remember that those encephalitics in whom the narcisistic type is overpronounced will bear the disease process quite differently from those of the transference type. This fact in itself should be a signal factor in eliminating a very large number of encephalitics from the group exhibiting conduct disorders which we have demarcated as the classic sort. These adolescents with the transference type of libido may escape our great dilemma altogether. The stubborn types of narcisistic neuroses are our main concern and perhaps the transference types may yield to simpler procedures than those we have proposed herein. Empirical rules of types and degrees of structural damage of brain tissues give some clues as to the course and prognosis of the pathoneuroses although all too little attention has been paid in the past to this sort of topical injury to the brain. A stormy pathocerebral process may provoke a more vigorous pathoneurotic reaction, and the clinical outcome in our cases proves this over and again. The traumatic factor certainly is not wanting in throwing a great mobilization of narcisistic libido into the troubled psyche of our encephalitics. It is largely a question of how suddenly and completely the disorganization of the ego nucleus and its correlated structures takes place, as to whether we have a unity in the disorganization of the total conduct or not. The saving out of certain parts of the narcisism that are still relatively sound in adaptations to reality, has made many a clever psychopathologist a real artist in helping these cases where waiting for a more scientific recognition has been impossible. Aggregating the wrecked personality about the remnant ego nucleus and being able to make that portion the dominant and controlling factor, is the psychotherapeutic talisman. If this fails the psychosocial reconstruction fails also, and a panic or outburst succeeds. As Freud, in speaking of paretic processes, states it, in such panics it would seem as if all the psychic energy which has been accumulated in the course of development were suddenly released and transformed into current energy; hence our clinical picture of fury and destruction so unfortunately the classic reaction in our little patients.

Two cases will be given, the first being an attempt to study the effects of training and psychoanalytic reeducation of a child placed in an observation home.

Case I.—E. K., aged ten years. The outstanding problem at the time this girl was placed under observation was her parents' inability to stay in any one apartment owing to complaints about her noisy or socalled crazy conduct and their inability to handle this situation.

The father was mild tempered, intellectual, and a free thinker. He influenced the child through her affection for him, but in spite of his quiet and gentle manner his attempts to interest her in reading and his desire to undertake other forms of constructive treatment were unavailing. The mother was of a phlegmatic temperament; she took a strongly repressive attitude toward the child, and used foods, sweets and personal bribes as rewards for good conduct. Both parents were proud of her quick, responsive mind and her ability to dance, sing and recite. She was frequently allowed to "show off" at public places of entertainment. She fully appreciated her parents' pride in her performances and played them for her own purposes. They became helpless in her hands and she employed her worldly wisdom to this end. The parents showed a corrective attitude toward the child's physical symptoms and led her to believe that they held her responsible for her puffing, shaking and sleeping spells.

The following personal history was obtained: Delivery had been normal. As an infant she had fits of meaningless crying day and night. Repeated physical examinations showed no abnormality. She was a "nervous" child, quick to learn but always difficult and overdemanding. She insisted on having her own way and had frequent fits of mild tantrums. Nevertheless she was greatly liked by her teachers who considered her very bright. At the age of seven, she awoke one morning with shaking attacks; these recurred almost daily. Later she developed attacks of puffing, and still later the sleeping spells appeared. Her tantrum episodes became more frequent and severe and it was found increasingly difficult to make her conform to any sort of discipline. She began to show marked sexual irregularities, indulged in autoerotic acts, and became excited in the presence of boys. Her conduct was further complicated by the fact that she would scream, fight, or throw anything she could lay hands on when not allowed her own way and had to make new adjustments.

Shortly after the patient's arrival at the training school on August 1, 1922, she went into a violent tantrum, but quieted down soon after her parents' departure. The outstanding characteristics noted during the first days of observation are as follows: There was marked restlessness; her hands and feet moved constantly in muscular contractions that had the appearance of various types of habit movements. She wanted to dance, to play, and had sudden changes of mood, with a tendency to run away. She was uncooperative to a degree, refusing to go to bed, or to adjust herself to other matters of routine. She screamed at the top of her lungs, ran out of the house, used vile language, and in fact any disagreement with her immediate desire was sufficient to throw her into a screaming attack and to change her attitude towards the person for whom she had just expressed deep affection to one of great antagonism. The child said, "I am a beast; I do not want to be a lady, I never want to be nice or anything." There was an abnormal appetite. She disturbed and broke up the games of other children, went about hugging and kissing everyone and particularly desired to sit in the laps of the young men in the household. She stuck pins in the cat's ears and showed marked cruelty in her attitude towards the animals on the place. These conduct disorders were accompanied by three distinct physical symptoms: 1, puffing, characterized by an increased respiratory movement which appeared when she was angry or corrected, when she was frightened, or when interested in some pleasurable task; 2, the shaking attack characterized by an exaggerated shivering as if she were having a chill; and 3, the sleeping attack, which came on independent of the other symptoms just noted or was closely associated with the puffing or shaking episodes.

At first the patient's wishes were considered and every effort made to meet her demands half way, but it was soon found that this attitude only made her more restless and exacting, and a different one was assumed. She was given an opportunity to understand that those in charge wanted her to get well, but that she must try to do something for herself, refrain from using coarse language, screaming and running away; that these suggestions were not a matter of personal convenience to those in charge but represented the attitude of society as a whole. This admonition was productive of good conduct for a short time, but another screaming tantrum soon followed. The child was then given another friendly talk in which she was told that the members of the household were not trying to repress her but that good conduct and kindness to everyone would still be insisted on and above all there should be no more yelling. The child looked at her instructor with great hate and said she did not have to be friendly with anyone if she did not want to. She was assured that this was a personal matter which would have to be decided by herself, and that those in charge would continue to do their part in their attitude of friendly interest in her welfare. The following day, after a little talk about her getting her room in order, the patient ran from the house and up the road. No one went after her as was done in previous episodes, and when it began to rain she returned to the house for shelter. Nothing more was said and she made no effort to make her bed, but it was noted next day that she did attempt to put her room in order, saying it was the first time she had ever tried to do anythink like that all by herself. This act of cooperation was performed only with marked resistance. She said frankly that she did not care to be "good" and that she preferred to be alone rather than try to make any adjustments. The child was allowed to stay by herself and do as she pleased. Towards night she voluntarily came to the instructor and said that she wanted to make up. When commended on her change of attitude she said: "I made my bed this morning, and I'm going to be good—no more yelling." As the patient had a good sense of rhythm and was fond of dancing she was given dancing lessons in the hope that they would serve as a satisfactory form of sublimation.

Several attempts to get in closer touch with the patient's emotional attitudes and gain deeper levels of her conflicts by analysis were met with great resistance. She had frequent sleeping spells during such interviews, only giving a word or two about herself sullenly and unwillingly and then falling into another sleep. Her protests varied from, "Why are you asking me all these questions? I don't want to tell you anything," to "I'm hungry; give me something to eat and I'll tell you anything." When the food was supplied she would assume a jocular mood and begin to dance.

After several weeks her behavior showed some improvement. She stopped using vile language openly but occasionally expressed herself in Yiddish, using derogatory terms to belittle those with whom she was displeased. The usual corrective suggestions were applied and she gave a much better reaction toward them. Once during a talk she said, "Don't tell me how bad I was, for it makes me ashamed."

After three months' observation we find the following comment: "This girl's three prominent symptoms seem to be decreasing. Through our interviews and analytical talks her mental attitude has undergone considerable change. She gets along better with the group and is more considerate of their rights. She is more amenable to discipline and shows less of a tendency to tanrum episodes."

Conduct disorders continued but with increasingly longer free periods during the remainder of the child's stay—ten months in all. The child was gradually helped to connect the necessity for selfcontrol and conformity to the needs of the group with her own physical and emotional welfare. To illustrate: At first she objected to remaining quiet in her room until nearly noon, but finally realized that this rest period gave her a better opportunity to get the day started right. She noted that she was not so much troubled by puffing or sleeping spells when this rest was taken and her mental attitude was better. Her desire for food was treated in the same way and her general physical condition showed marked improvement. She made decidedly better social adjustments in every way. Little reprimands that a few months previously would have thrown her into a violent reaction, now seemed to be taken rather good naturedly. Gradually she began to do little tasks about the house, usually without direction. She gave up the idea that she could find some place to live where she could do exactly as she pleased.

(To be concluded)

An Unusual Case of Syphilitic Epididymitis

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Syphilitic involvement of the epididymis occurs more often in the secondary stage of syphilis than is usually recognized. Hutchinson (1) says, "Many observers have noted in the secondary stage slight enlargement of the head of the epididymis that rapidly disappears under treatment." Fournier (2) observed eight cases that appeared between four and five months and six cases between five and fourteen months after the chancre, and nine cases that appeared in from two to nine years after the initial lesion. The symptoms in these cases are, however, usually so mild and the enlargement is so slight that they are overlooked by the patient and the physician.

In cases that are recognized clinically, the statement holds good that "Syphilis of the testicle usually involves the orchid alone; and when the epididymis is affected, it generally follows syphilitic infiltration of the orchid proper." As syphilis of the orchid is in most instances a tertiary manifestation, syphilitic epididymitis is clinically apt to be asymmetrical (unilateral) like all tertiary lesions. Keyes (3) gives a history of sixty-seven cases of syphilis of the testicle (including either or both the orchid and the epididymis) in which bilateral involvement occurred in ten.

Syphilis of the epididymis as it is generally found, involves the globus major and in quite a characteristic way. The infiltrated part forms a hard, smooth mass with a sharp edge and fits over the upper pole of the orchid like a helmet. It is distinctly separated from the testis proper by a deep sulcus. Gummatous nodules are rare in the epididymis. Keyes, in the sixty-seven cases mentioned above, found that "syphilis began in the epididymis as a rounded nodule, the size of a marrowfat pea, and progressed by the addition of other nodules in the epididymis and in the testicle in one case."

In our case, the patient presented a bilateral syphilitic epididymitis without involvement of the testes proper, and on one side the syphilitic infiltration was limited to a small nodular mass in the tail of the epididymis.

Case.—Mr. H. M., aged twenty-five, was admitted to the Bellevue Hospital Clinic for syphilis on January 5, 1925. He had acquired a chancre three years previously and had, at that time, received antisyphilitic treatment that was entirely inadequate. This consisted of one intravenous injection of arsphenamine and seventeen intramuscular injections of mercury. Physical examination disclosed tertiary syphilodermata on both forearms, chiefly on the left, and on both legs and thighs, most marked on the right side. The duration of these lesions he placed at three months. At the head of the right epididymis, there was a typical syphilitic helmetlike mass covering the upper pole of the testicle and extending posteriorly half way down the orchid; and a slightly tender, rather irregular mass, the size of a very small hazelnut, was felt in the tail of the left epididymis. The patient had first noticed the enlargement of the right epididymis two weeks previously, and he placed the duration of the small mass in the left at two days. Both orchids were apparently normal. His blood Wassermann was three plus.

While the helmetshaped mass above the right testicle was characteristic of the disease, the nodular

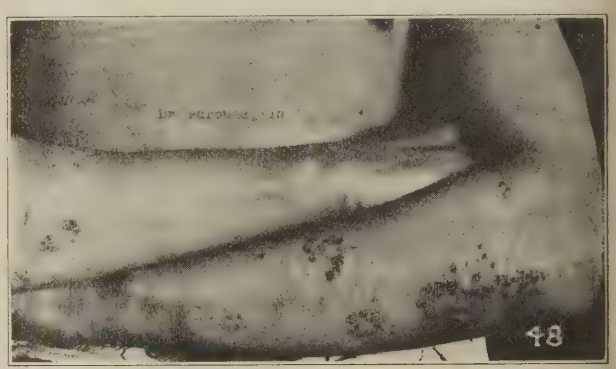

Fig. 1.—Tertiary syphilodermata on forearms of patient.

mass in the tail of the left epididymis required differential diagnosis from, 1, gonorrheal infection; 2, an infection following trauma of the posterior urethra by a urethral sound or other instrument passed into the bladder, or by a too vigorous prostatic massage, and 3, from a tuberculous process, for it is not at all uncommon for a tuberculous process to be present in the epididymis for a considerable time without the patient being aware of it, the infiltration being first noticed by accident.

DIFFERENTIAL DIAGNOSIS

Gonorrheal epididymitis was excluded on the following grounds: while the patient had had a gonorrheal urethritis some eighteen months previously, his urine was clear and his genital tract was found entirely negative on physical examination. Traumatism of the posterior urethra was excluded by the history.

The question of tuberculosis presented greater difficulties, but because of the absence of any signs or symptoms suspicious of tuberculosis in any other part of the genitourinary tract and of tuberculosis elsewhere, and the presence of positive signs of syphilis, we considered this mass in the tail of the left epididymis to be syphilitic and the results of treatment justified this diagnosis.

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3. Keyes: *Dis. of the G. U. Organs*, 1908.

Some Notes on Cancer*

V.—On Metastases and Other Distance Effects in Cancer

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(*Concluded from page* 567)

We return to the point where changed cells were being passively transferred from the focus to the margin of the new growth. It is hardly to be supposed that in cases of virulent malignancy the outbound movement of the new cells, considering its haste, should take place in such an orderly manner that the firstborn cells should remain at the head of the procession and the younger generations should fall in line each in their proper turn. More likely there probably will be a general mixup of cell generations, older cells perhaps striking an obstacle which detains them and younger cells being pushed past them. Goldmann (24) (p. 19): "In almost every cancer there are found differences in the modus of cell dissemination."—Thus it may happen that a cell which has only just felt the full force of the focus reaches the margin still in the condition which was impressed upon it at the focus without having undergone changes on the way, there having perhaps not been sufficient time for a division to have taken place in transit. The finest lymph vessels are still of a size sufficient to admit the cancer cell. W. J. Mayo (31) (p. 1256): "Generally, it is the function of the lymphatics as absorbents to pick up . . . the cancer cells which are too large to enter the blood capillaries." If then at the margin this cell be taken hold of by the lymph stream and be carried off, what will happen? In the light of our contention it must be assumed that the cell will divide and that its descendants will keep on dividing until by inward and outward diffusion they have been so changed that the normal lymph has ceased to be a stimulus of division for them.

For the convenience of the discussion we will here introduce for the division enforcing substance in the focus, in part impressed upon the moving cell and carried away by it, the word "noxia," (meaning a noxious fluid, from the Latin "nocere," to damage) an indifferent word which has been selected in order not to prejudice here the nature of the noxious substance to be discussed later. We may say then that the "vagrant" Ewing (32) (p. 83) cancer cell and its descendants keep on dividing until all the noxia originally carried by the vagrant mother cell had been lost to the lymph, and the descendants had eventually been reduced to near normal cells, as normal as their degenerated condition would permit. Erdmann (l.c.): "A tumor cell . . . carries an unknown plus of which it can be deprived by being grown (in vitro) in the normal plasma of a noncancerous animal."—The small quantity of noxia carried originally by the mother cell can, of course, not be believed to prevail against the large volume of circulating normal lymph, and in all probability it will be neutralized or eliminated and what remains of the cells will be phagocytyzed (v. Gaza 33), this whole group of vagrant cells thus disappearing from the circulation. v. Hansemann (8) (p. 185): "Not every dissevered cancer cell produces metastases; they certainly perish in large numbers." Mac Callum (34) (p. 107): "Where a tumor . . . is discharging into the circulation many emboli of its cells, most of these may be destroyed by the activities of the tissue fluids.—Orth (35) (p. 327): "The formation of metastases depends not alone upon the disseminated cells, but also on the individual organism, so that many of the cells remain ineffective."—Hirschfeld (36): "Normal serum is capable of damaging cancer cells."—Greenough (37) (p. 460): " . . . the failure of occasional blood metastases to flourish seems to justify the conclusion that substances in the normal serum are inimical to the growth of cancer cells."

A view differing from our conception is expressed by Owen (38): "A cancer cell adrift in the lymphatic stream is like a message thrown out at sea in a bottle. It may be found years afterwards, who can say when and where?"—It will, of course, most likely land nowhere, being in all probability destroyed long before it could have reached the shore.—Borst (39) (p. 28) calls this period during which cancer cells circulate in the body fluids and are being destroyed therein "the premetastatic phase." But if vagrant cancer cells are thus destroyed, how then can Virchow's (40) (p. 55) observation come to pass that "cancer cells appear capable of being the carriers of . . . substances to distant points?" Borst (l.c.) contents himself with stating in reference thereto that "during the metastatic phase an unknown protective force fails to be effective."—Hirschfeld (l.c.) observes that the serum of animals carrying tumors is not possessed of the faculty of injuring the vitality of tumor cells.—Freund and Kaminer (41) blame the failure to protect on "the absence from the serum of cancer patients of protective substances which are present in healthy serum."

From our point of view, to the contrary, something has been added to the serum by which vagrant cancer cells are then enabled to reach distant points in safety, this something being the noxia impressed upon the loose cells at the focus and by them lost to the serum. The condition of the serum and of the floating cells evidently must be harmonized. What one single cancer cell was incapable of doing, namely, to make an impression upon the general medium, may eventuate 1, when large quantities of cancer cells are more or less continually being disseminated from the focus; 2, when the effect of the release of their noxia into the serum is being increased by the parallel effect of their necrobiosis; 3, when that effect is still further augmented by the also equally directed effect of an abnormal endocrine condition. The latter two

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points will be reached for discussion in later chapters. We arrive then at the conclusion that a certain degree of dyscrasia of the body fluids in general would seem to be indispensable before cancer cells can remain alive in them while they are being carried far away from the primary focus. To the same conclusion came Borst (42) (p. 30): "A certain degree of dyscrasia of the body juices must have set in before disseminated cancer cells can stand their ground," also Maresch (43) (p. 17), who writes in 1925: "Present tendencies assign a rôle (in the genesis of cancer) to the hormonal action of endocrine glands, wherewith we have gone back close to the cancer dyscrasia of the ancient humoral pathology. But modern science has risen in a spiral high above the old ideas."

If we now assume the general serum of the system to be in this condition of dyscrasia, if we further assume a massive discharge of cancer cells from the focus, if we also assume their arrival at distant points, and finally assume that they become anchored at the distant points in the stagnation there prevailing or by them created, (another matter for later consideration), what then is likely to happen at these metastatic anchorages? Petersen (20) (p. 699): "The cells which make a beginning with becoming separated from the primary tumor and discontinously invade the organism, most readily succumb to its protective forces. The first metastases of a carcinoma quite frequently recede again in their entirety. Not until the soil in the environment of the carcinoma has been manured with decomposing cancer cells will the subsequently arriving cells have been enabled to take root in that soil."—Lubarsch (44) (p. 304): "The mere dissemination of malignant cells does not suffice to give rise to metastases. The conditions encountered by the vagrant cells at the place where they land is what counts."—M. B. Schmidt (7) (p. 47): "Cancer cells which had been carried into the small arteries of the lung in a condition of vital energy perish therein in large numbers . . . not from their own natural weakness, but under the influence of the special local conditions into which they were transferred."—Wood (45) (p. 6): "If a tumor-carrying animal is massaged and killed at once, the capillaries in the lungs will be found stuffed with cancer cells. If such an animal is kept for a considerable time, only two or three metastases may develop."

It would appear then that the arrival of a greater number of living cancer cells at a given distant point is probably followed by the death of perhaps all of them; thereby they are supposed to manure and thus prepare the soil for a metastasis at this point. Each cell had probably carried along and delivered at the new focus noxia from the primary focus. Thereby and with the aid of the other two factors just mentioned, namely necrobiosis and faulty action of endocrine glands, there would then perhaps be brought about in the stagnation at the new secondary focus a degree of concentration of the noxia closely approaching, if not equalling the degree of its concentration in the primary focus, so that subsequently arriving cancer cells would find at the secondary focus conditions similar to those which they had left at the primary focus. They would therefore continue to live and create and maintain at the new anchorage approximately the same conditions which are believed to have prevailed at the primary focus at the time of its incipiency.

The secondary process thus would seem to offer a chance for studying indirectly the primary process: the transformation into cancer cells of fixed tissue cells exposed to the influence of the noxia and thus, as we said at the beginning of this paper, the chance to argue back from the secondary to the primary condition.

This way of looking at the matter is supported by Virchow (40) (p. 55) who says: "That much can be accepted as definitely established by observation that such a dispersed cell-seminium produces the new tumor not out of itself, that the new nodes do not arise, as one would have been inclined to think, from the disseminated cells themselves, but that at the new focus the preëxisting tissue cells become in turn affected and that from them, through local proliferation, arise secondarily the socalled metastases." On the other hand this view is opposed by numbers of pathologists of the modern school, who do not agree with Virchow on this point. They maintain, to the contrary, that the vagrant cancer cells produce out of themselves the metastases. Thus says for instance Herxheimer (46) (p. 511): "As a consequence of their changed metabolism tumor cells contain toxins which are apt to injure their neighbors (Marchand). These toxins may probably also be of considerable importance in the formation of metastases. Quite likely the disseminated cells bring the toxins along and by means of them make the soil suitable for themselves by killing off the local cells and then, on becoming sufficiently powerful to do so, form out of themselves the daughter tumors, frequently only after numerous vagrant cancer cells have perished while forming metastases." Virchow contends that the vagrant cancer cells by their death indirectly change at the secondary focus to their own cancerous status the fixed tissue cells there present. The modern school on the other hand contends that the vagrant cancer cells kill the fixed tissue cells present at the new anchorage and, having thus manured the soil and having made it fit for themselves to live on, they themselves thereupon become the direct producers of a secondary tumor. The modern view, contrary to our ideas, accords with the conception of the primary formation of malignant tumors by the transformation of normal cells into cancer cells endowed with the supra-normal capacity for active invasion and penetration of neighboring tissue. These cancer cells, concededly more or less devitalized and now likely further enfeebled by what they had undergone during their vagrancy, would then become revitalized and thus for a second time capable of producing a malignant tumor.

If, as we believe, the acquisition of the active powers mentioned was erroneous in the first instance, it is in all probability also erroneous in the second instance. Virchow's view, on the other hand, seems to be in accord with recent experimental results. For instance, Goldschmidt (47), experimenting on spermatogenesis in butterflies, found that upon the death of sperm cells in a follicle the sessile follicular cells immediately began to multiply quite excessively and to show evidences of a most intense metabolism, the process being so precipitate that the local cells did

not divide by mitosis, but that their nuclei were torn apart and fragmented.

In any event the contending opinions appear in agreement on the point that at the new anchorage a chemically changed focus had first to be formed and had to furnish the condition on the basis of which the metastatic growth could then take place.

It goes, of course, without saying, that the noxia with which the vagrant cancer cells were presumed to be charged, must have been in existence at the primary site before it could have been carried away. Where did it come from? There were arriving at the primary site in the incipient stages of the new growth no cells charged with the noxia and capable of parting with it, as happened at the secondary site. The noxia must be supposed to have originated in loco at the primary site. The fact that unlimited numbers of cells issuing from the same spot are all charged with the noxia and have supposedly undergone the more or less identical change, makes it appear improbable that the initiative for the change should have developed independently in each individual cell. The fact seems to argue rather for a common source. The pathological development seems to urge the view that the common source is in all probability a chemically changed focus; not a changed general medium, but a chemical change confined to a small local area and in intimate contact with the changed cells, the tissue adjacent to them being at the incipiency of the process not thus changed. Versé (48) (p. 69): "Surrounded on all sides by normal mucous membrane changed glands are demonstrable the transformation of which from the preformed glandular epithelium can be proved with certainty." Hauser (p. 15): "One can see often a quick transition from the normal to the diseased mucous membrane; quite abruptly both border upon one another."

At this early stage, before dissemination had set in, the changed tissue has been excised *in toto* without a trace of the started process being left behind. The excised tissue, therefore, must have contained with certainty the source of the trouble, the focus.

Circumstantial evidence gained at the secondary site, and the pathology of the case at the primary site make the conclusion almost unavoidable that the original underlying influence at the primary site is probably a localized chemical change of the tissue fluids, confined to a small spot, which is walled off, as we shall see later, from the general medium and which is believed to be the primum movens: a medium in the medium, a chemically changed focus.

In the next following chapter we shall now direct our attention to what the literature contains in regard to the chemistry involved in the problem.

The author's references will appear in his reprints.

A Hitherto Undescribed Cause of Impotence in the Male

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In my book *Disorders of the Sexual Function,* I said (page 177), "The tendency of late has been to see to it that the young female should know more of sexual matters before her marriage than has been the rule heretofore. This is perfectly proper. It seems to be taken for granted, however, that no such instruction is necessary for the male. It is taken for granted that most men have indulged in sexual intercourse before their marriage, and therefore do not need instruction in this regard."

I have of late had several cases in which the only reason for the supposed impotence was the fact that neither the husband nor the wife knew how to perform the coital act. It has therefore been my custom for some time past to ask every patient coming for impotence who had been continent up to marriage, to lie down on the couch and show me what is the position his wife assumes during the act. In the cases above referred to, the patient would lie with both legs fully extended and parallel, that is, just as in the ordinary sleeping posture. I would ask particularly if the wife had her knees flexed and thighs abducted during the act, but would be fully assured that this was not the case. It can be easily seen that in such position it would be impossible for coitus to take place, and if these unsuccessful attempts are continued in for a long period of time, real impotence may result.

It might seem absurd that instruction should have to be given in this regard, but when I emphasize that I have seen quite a number of cases in which the condition had lasted several years, and during this period the patient had been treated by sounds, electricity, prostatic massage, instillations, etc., for a supposed impotence, we at once see the importance of this investigation.

In some of my cases the patient had been under the care of prominent and excellent genitourinary surgeons as well as neurologists, without the doctors ever guessing the real cause of the condition. In one case even, the patient had been indulging in normal coitus with a prostitute for many years before marriage, but never noticed the position she assumed, and was greatly surprised that he could not have proper intromission with his wife since marriage. Strange to say, I have had two medical men, recently married, who had been continent before marriage, in which the above mentioned cause was the reason for their failure.

It is indeed very gratifying to be able, with a few words of explanation, to cure the condition, especially in those cases where other specialists have failed, and the condition had lasted for several years. The increasing tendency towards continence in young men of late years will undoubtedly increase the number of cases seen, and it therefore behooves every practitioner to be on the lookout for this cause.

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Historical Medicine

John Hunter—1728-1793*

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Abernathy, in his Hunterian oration delivered in 1819 before the Royal College of Surgeons in London, calls John Hunter "the first and great physionosologist or expositor of disease," adding that "the whole history of medical science affords no instance of its promotion by any individual at all comparable with that produced by him." Although this statement has not passed unchallenged, it testifies to the loyalty of his pupils and the esteem in which his works were held by them at a time when their own achievements were being heralded by the scientific world. Anatomist, biologist, naturalist, physiologist, physician, surgeon, pathologist, his composite career marks the boundary line between individualistic efforts in the field of science and eighteenth century beginnings of a more systematized advance. It unites the progress in fundamental sciences begun by the great German physician, Haller, with the more materialistic trend of his own day, to the benefit of both experimental and clinical medicine.

Haller was a physician given to scholarly dissertations, and was enriched and endowed with great intellectual powers. Hunter was preeminently a morbid anatomist, who disclaimed any special talents, remarking that if he had promoted professional knowledge, it seemed to him chiefly because of his disposition to distrust opinions and to examine every subject for himself. Both investigated by experiment the nature of function, and both became exact and comprehensive anatomists. Hunter, however, was the first to perceive that no system of physiology could be perfect that did not equally explain the morbid as well as the healthy actions of life.

JOHN HUNTER

While the practice of surgery afforded him an opportunity for the practical application of his studies in morbid anatomy, his concern for that specialty is exemplified in his remark that "the last part of surgery, namely operations, is a reflection on the healing art. It is a tacit acknowledgment of the insufficiency of surgery. It is like an armed savage, who attempts to get by force that which a civilized man would gain by stratagem. No surgeon should approach the victim of his operation without a sacred dread and reluctance, and should be superior to that popular eclat generally attending painful operations, often because they are so, or because they are expensive to the patient."

John Hunter was born at Long Calderwood, a small estate about eight miles from Glasgow, February 13 or 14, 1728. He was the youngest of ten children, three of whom died in early childhood. His father was apparently in fairly comfortable circumstances. He was sixty-eight years of age at John's birth, and died ten years later, leaving him to the care of an indulgent mother. During the boy's childhood and early adolescence he was allowed to do very much as he pleased, and not compelled to take advantage of the opportunities for study that his position afforded. He was fond of the village games, and led a carefree, unrestrained existence, observant of nature, but lacking in self-control, idle and ignorant. He is spoken of as having little taste for books, preferring participation in the country sports to studies of the elementary branches of knowledge. Speaking of himself, he afterwards said: "When I was a boy I wanted to know all about the clouds, the grasses, and why the leaves change color in the autumn. I watched the ants, bees, tadpoles and caddis worms. I pestered people with questions about which nobody knew or cared."

During these years, however, he is said to have acquired some manual dexterity, and at seventeen went to Glasgow to assist a brother-in-law, who was a cabinet maker, and, like John, more given to convivial habits than to earning a livelihood. Nothing came of this association and he returned home. His brother in law, as a further charge against him, was said to possess certain companionable talents, namely, the unfortunate endowment of a good voice and a musical ear. After becoming bankrupt, he took to teaching music, and became a clerk to an Episcopal society in Glasgow.

While John regaled himself at the country side, his brother, William, ten years his senior, was entering upon a career in London that earned for him a place among the most illustrious men of his day. He had at school acquired a reputation for industry and sobriety, and after five years at Glasgow, at first thought of entering the ministry. Later he applied for the position of schoolmaster at his home, but failed to get the appointment. After this, his friendship with Cullem led to an association in a scattered

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country practice at Hamilton. Cullem said of him: "His conversation was remarkably lively and agreeable, and his whole conduct more strictly and steadily correct than that of any other young person I have ever known."

After spending three years with Cullem, William attended a series of lectures delivered by Alexander Monro at Edinburgh, and then in the summer of 1741, at the age of twenty-three, went to London. Here he became assistant to Dr. John Douglas, who died the following year. At the same time he made the acquaintance of Samuel Sharp. In 1746 he was admitted to the corporation of surgeons of London. The next year he was appointed physician accoucher to the Middlesex Hospital, and later surgeon accoucher to the British Lying in Hospital.

The fame of William Hunter without doubt soon reached his home village, and attracted the attention of John, who straightway applied for a place in his brother's dissecting room. We do not know whether he was led to do this because he felt any call to study medicine, or because he sought further opportunities for ribald companionship that a residence in London would afford. William accepted his offer in September, 1748, and two weeks before his course of lectures began, set him to work under the instruction of his assistant, Mr. Symonds. There is no doubt that he did this for no other reason than to give employment to a hitherto idle young man, for John certainly had shown no indication of talent for a surgical career. He was untutored, untrained, and altogether unprepared when William took him in hand and began the process of molding and shaping a useful life from about as unpromising clay as the hills of Scotland could afford. We can imagine his gratification when John first showed his dexterity as a dissector, and became able, within a year, to assist in directing the work of other pupils. He then obtained permission for him to visit the Chelsea Hospital under the tutelage of Cheselden, who, besides being the most celebrated surgeon of his day, was also known as a patron of the fine arts, a friend of Pope, the poet, and the designer of Putney Bridge and the Surgeon's Hall.

Thus John was kept busy between dissecting room and hospital until 1750, absorbing, no doubt, from the association with his brother and professional companions, some of the culture he had thus far little cared to possess. The restraint of polite society at first was probably irksome, but he found opportunity for more congenial fellowship when, as procurer for the dissecting room, he cultivated the society of a rather ill savored company among whom were members of the resurrection squad. To them he was familiarly known as Jack Hunter. How he profited by this companionship is attested by the way in which, several years later, he secured the skeleton of the famous Irish giant, O'Brien. Learning that O'Brien was in poor health, he sent his man, Howson, to watch his movements, that he might, at death, secure his body for dissection. O'Brien, hearing in some manner of the plans, left orders that when he died his corpse should be watched until it could be enclosed in a leaden casket and consigned to the seas. When word came to Hunter of his death, he promptly hurried to the place where his body lay, and bribed the watchers to deliver it to him for fifty pounds. The deal failed to go through, however, until he had paid five hundred pounds; then, in the dead of night, he finally received his prize in a hackney coach. The coffin was filled with rocks and taken out to sea. In order to facilitate his work, and escape detection, the body was quickly cut to pieces and the flesh removed by boiling. The process, unfortunately, gave an undesired brown color to the bones that formed the skeleton which headed his osteological collection.

After Chelselden's death, he studied five years as surgeon's pupil in St. Bartholomew's. Then the question arose as to the line of practice he should follow. William, who was eventually to devote himself to obstetrics, suggested that John should join him in that specialty, but, seeming to recognize his brother's limitations and the handicap of his uncouth ways, he sent him to Oxford. John remained there some two months, and returned to London anxious to secure for himself a chance of election to one of the hospitals, and the opportunity to practise surgery. He entered St. George's as surgeon's pupil, and two years later served as house surgeon. At the same time he was taken into partnership in his brother's school of anatomy. While active in this capacity, his acquaintance with anatomy was quite generally recognized, and his opinion frequently sought by others engaged in anatomical studies. It was then that with Dr. Mackenzie and his brother, he discovered the circulatory relationship between the placenta and uterus. The discussion of the priority of this discovery led to an unfortunate misunderstanding with William when it was published.

In 1759, because of some incipient lung trouble, he was advised to leave London for a time and go South. Accordingly, he secured an appointment as staff surgeon in the Army, and went first to the western coast of France, and then to Portugal with his troops. Here he began his study of gun shot wounds and inflammations, and research in the field of comparative anatomy. His experiments to ascertain the digestive state of a hibernating animal, and the faculty of hearing in fishes, illustrate the simplicity that characterized all of his research work. Taking hibernating lizards and snakes, and keeping them in cool places, he forced food into their stomachs and killed them at intervals to note the extent of any digestive change. To determine the faculty of hearing in fishes, he watched beside a pool in a nobleman's yard, and saw them scatter at the report of a gun fired by an assistant behind him.

In 1763, at thirty-five years of age, he returned to London and began practice as a surgeon. He was without funds, except for his half pay from the Army, and the place he had had with his brother was now occupied by Hewson, who had been taken into partnership soon after Hunter left London. First and second places in hospitals were also filled by very capable men. He was therefore compelled to depend for a practice upon the reputation gained by his previous residence and work. To augment his scanty income, he gave lectures on anatomy and operative surgery to a private class, but, not being a clear and convincing lecturer, had few pupils. Previous misunderstanding with his brother kept him from receiving aid from that quarter, and his show of conscious mental superiority raised bitter enemies and prevented

him from becoming a popular member of the profession. A friend observed to him one day: "Ah! John, you are always at work!" "I am," replied John, "and when I am dead you will not soon meet with another John Hunter."

Intrinsic excellence in his work, and honesty of purpose, however, gave him the most loyal support and friendship of a few who recognized his worth. In writing of his application for appointment as surgeon to St. George's Hospital, he said: "It was not with a view to augment my income either immediately, by the profits of the hospital, or in a secondary way, by increasing my practice, but to acquire opportunities of extending my knowledge, that I might be more useful to mankind." The appointment which he received provided what he desired, attendance upon the living and examination of the dead, besides a share of the pupil's fees and the credit of being on the staff. One of his biographers states that his income never passed one thousand pounds until after eleven years of residence in London. He spent all that he made for specimens for his museum. Although continually at work on some research problem, he had not published anything up to 1767, when he was elected a fellow of the Royal Society, a year before a similar honor was bestowed upon his brother. His first book, the first part of *Treatise on the Natural History of the Human Teeth,* was published in 1771.

In 1773, at the age of forty-three, he married Annie Home, the daughter of Mr. Robert Home, whom he had met while serving in the Army. She was twenty-nine years old, "an agreeable, clever, and a handsome woman, rather fond of gay society," a taste which occasionally interfered with her husband's more philosophical pursuits. It is said of him that, on returning home late one evening, Hunter unexpectedly found his drawingroom filled with musical professors, connoisseurs, and other idlers whom Mrs. Hunter had assembled. He was greatly irritated, and addressed the astonished guests in the following manner: "I knew nothing of this kickup, and I ought to have been informed of it beforehand, but as I have now returned home to study, I hope the present company will retire."

In 1776 he was appointed Surgeon Extraordinary to the King, and in the same year gave the first of his Croonian lectures on muscular motion before the Royal Society. His practice had by this time greatly increased, and from his income he was able to purchase more and more for his museum. The number of specimens soon made it necessary for him to secure new quarters, and he purchased a lease for a plot of ground and erected a building to house them. About the house he had a covered alley way six feet deep with a subterranean entrance, through which he could drag anything from a giant's body to a good sized whale. The burrow opened into the stable yard, in one corner of which was another passage which led to three cellarlike vaults, where he kept his dangerous animals.

In these quarters John Hunter worked, surrounded by his collection, and here he gathered a few choice pupils who came to know him so intimately that among themselves he was known as the "dear man." Jenner was the first to come, and the friendship between pupil and master was very intimate, and lasted throughout Hunter's life. While Jenner was away he kept in close touch with him by letter, and these epistles, portraying the restless, energetic mind, constituted an interesting portion of most of his biographies. One of his letters to Jenner is as follows:

> Dear Jenner: I received yours, and was extremely happy to hear of your success in business. I hope it will continue. I am obliged to you for thinking of me, especially in my Natural History. I shall be glad of your observation on the cuckoo, and upon the breeding of toads: be as particular as you possibly can. If you can pick me up anything that is curious, and prepare it for me either in the fish or flesh way, do it.
>
> Pictures have been very cheap, but the season is now over. There will be but one sale, namely Fordyce's, but I believe all of his pictures are exquisite and will go beyond you or me. Since you wrote to me, I purchased a small landscape of Barrett's of cattle and herd. I gave five pounds, seven shillings and sixpence; it is one of his eight guinea pictures. You shall have it or not as you please. I have one of the same size that I bought of him some time ago.
>
> I saw the young lady, your patient; I do not know well what can be done. Let me hear from you soon.
>
> Ever yours,
>
> John Hunter.

The years from 1772 until his death were very productive. Among the most noteworthy of his publications were: his *Treatise on the Natural History of the Human Teeth; Treatise on the Venereal Diseases; Observation on Certain Parts of the Animal Economy; Treatise on the Blood, Inflammation, and Gunshot Wounds,* the latter upon which his future fame was largely to depend, comprising the results of forty years observation. Other important contributions include the account of his method of treating a popliteal aneurysm, and *The Digestion of the Stomach after Death.*

In 1773, he experienced his first attack of angina pectoris. In 1785, he had his most severe illness, and from that date until his death, the spasms were easily reproduced by the most trifling exertion or mental irritation. He was accustomed to say that his life was in the hands of any rascal who chose to annoy or tease him. In spite of this, however, he continued to enjoy life, and was not oppressed with a fear of death.

In 1792, he contributed his last paper to the *Philosophical Transactions.* It contained the results of his observations on the bee, a work that, it is estimated, required the dissection of four or five thousand specimens. As his practice had so greatly increased, and his health grown weaker, he asked for an assistant at St. George's. It was during an altercation over the appointment of two young men to the hospital, that, on October 16, 1793, he was fatally stricken. His body was carried from the hospital to Leicester Square in a sedan chair. An autopsy was performed, and revealed an extensive sclerosis of the coronary arteries. He was buried in the vaults of St. Martin's-in-the-Fields. On March 28, 1859, his remains were removed to the North aisle of Westminster Abbey.

Hunter left nothing for the care of his family after the payment of his debts but his collection of anatomical preparations, which after three years' delay, the House of Commons voted to purchase for the sum of fifteen thousand pounds. The museum was given first to the care of the Corporation of Surgeons, and later, after the chartering of the Royal College of Surgeons in London, to that body. He

had long before his death, taken, as an associate, his wife's brother, Sir Everard Home; and in 1792, Cleft came to him, and was given charge of the museum. Both of these men played important parts in the disposal of his writings and collections. Home was acting executor, and retained the manuscripts for twenty-three years. He was pressed by the trustees to write a catalogue, but never did so. From the manuscripts, it is charged, he used what he could in his own numerous papers and lectures, and in July, 1823, burned them, asserting that he did this because Hunter, feeling that they were not in shape for publication, desired that they should be destroyed.

In estimating the worth of John Hunter's contributions to science, his biographers credit him with being the first to bring the lights of physiology to bear upon the practice of medicine. His chief attribute of character was his great general mental strength and vigor. He also possessed a talent for observation that was unusually acute and carefully trained by constant application and practice.

Morally, he was a man honest with himself and work, a generous and warm friend, a kind husband, but wanting in control over his passion and temper. He was very liberal in his charges to his patients, and, it is said, he usually let them say what they could afford to pay. The following extract from an obituary in the *Gentleman's Magazine* probably credits him with more talent and understanding than he deserved. It is written: "As a man of letters, independently of his profound scientific studies, he had traced the practice of surgery to the earliest ages. He was well acquainted with every practitioner mentioned by Phiny, with all the Greek and Roman authors who had written on the subject, as well as with every modern one who had contributed to the perfection of the art. As a man well versed in ancient history, the Egyptian chronology was familiar to him as far as related to the antiquity of anatomy." One of his biographers in quoting this extract, states that it would appear as though the writer had purposely selected the weak points of Hunter's character in order to parody them.

The following epitaph composed by his wife was inscribed on the marble tablet placed in St. Martin's Church:

Here rests in awful silence, cold and still,
One whom no common sparks of genius fired;
Whose reach of thought Nature alone could fill,
Whose deep research the love of Truth inspired.

Hunter! if years of toil and watchful care,
If the vast labours of a powerful mind
To sooth the ills humanity must share,
Deserve the grateful plaudits of mankind,—

Then be each human weakness buried here
Envy would raise to dim a name so bright;
Those specks which in the orb of day appear,
Take nothing from his warm and welcome light.

Dioscorides and Hydrophobia*

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(*Concluded from page* 610)

NOTES

7. Joannes Lonicerus is unknown to fame and the dictionaries.—See Note 17, post.

8. Anchusa, Lib. 4, c. 21, pp. 299, 300. Spina alba, Lib. 3, c. 12, p. 203; Calaminth, Lib. 3, c. 33, p. 217; Peucedanum, Lib. 3, c. 74 p. 242; Cedrus, Lib. 1, c. 89, p. 51; Gagates, Lib. 5, c. 92, p. 418; Lychnis, Lib. 3, c. 96, p. 253; Elaphoboscum, Lib. 3, c. 64, p. 236; Rhamnus, Lib. 1, c. 102, p. 58, Sativa angelica, Lib. 3, c. 63 (n), p. 236; Mus. Lib. 2, c. 61, p. 116; Swallows, Lib. 2, c. 47, p. 113; Pumice, Lib. 2, c. 173, p. 191; Dipsacum, Lib. 3, c. 11, p. 293; Polemonia, Lib. 4, c. 7, p. 293; Sacra Herba, Lib. 4, c. 51, p. 314; Mandragora, Lib. 4, c. 65, p. 324; Taxus, Lib. 4, c. 68, p. 327; Phytuma, Lib. 4, c. 114, p. 349, Leontopodium, Lib. 4, c. 115, p. 31457; Mus Araneus, Lib. 2, c. 60, p. 116; Urina canina, Lib. 2, c. 73, p. 125; Psyllium, Lib. 4, c. 60, p. 320.

9. The word is "pituita," phlegm, rheum, one of the four humors.

10. Or tendons.

11. Eudemus or Eudamus, the name of several Greek physicians whose identification is very difficult.

12. Themiso or Themison, a celebrated physician born at Laodicea, a pupil of Aesclepiades. He came to Rome about 90 B. C. He took a middle course between empiricism and dogmatism, a real eclectism. He may be regarded as the founder of the school of Methodists which indeed became as dogmatic as the Rationalists. Themiso insisted on dyscrasia of the whole body not of the humors alone as the cause of disease. He was the first to use leeches which he applied to the temples in disorders of the head. See Anthon, *op. cit.*, p. 1313: Bass, *op. cit.*, p. 140.

13. In Lib. 2, c. 9, p. 99, *Cancri*, Dioscorides says: "The ash of river crabs cremated (exustorum), two spoonsful with about half the amount added of gentian root drunk in wine for three days is extremely useful in bites of a mad dog; in a decoction with honey, it alleviates cracks in the feet and seat, also chilblains and carcinomata; ground raw and drunk with asses' milk, crabs help against bites of serpents and spiders; cooked and eaten with the juice they help those affected with tabes . . . ."

14. Hamulus, a small hook: vulsella or volsella, tweezers, or pincers.

15. Salsamentum properly a salty sauce, but applied to saline washes, lotions, etc. We have an English word, salsamentarious.

16. Theriaca. There were a score of Theriacas and Mithridates without number. Charas gave the formulas for three Theriacas: a. Theriaca Andromachi senioris containing sixty-four ingredients (pp. 225-230). b. Theriaca diatesseron of Diatesseron, Honey and Juniper berries "invented especially for the poor," pp. 237, 238, and c. Theriaca reformata Domini d'Aquin of thirty-six ingredients (pp. 230-237). The first and third contain vipers. Charas also gives the mithridatium Damocratis of forty-eight ingredients (pp. 238-244). All these are prophylactic against and a cure for all poisons.

17. Joannes Lonicerus wrote *Scholia*, i. e. Notes, to the various Chapters of Dioscorides, which Scholia are printed as Addenda in this edition. He points out that Paulus Aegineta advises that before all else, care must be taken to keep the wound open. He says that while the fear of water generally sets in about the fortieth day, sometimes it does not appear for six or even seven months. The scholiast quotes further from this author as to the symptoms, etc., *Scholia*, Lib. vi, cc. 36, 37, pp. 84, 85.

*Read before the University of Toronto Medical Society.

18. Hiera containing colocynth. Hiera is a purgative generally containing aloes and in many cases also colocynth.

19. Dropacism, pitch plaster.

20. Galeni *De Simpl. Medic. Facult.*, ii, 10; p. 356 of Vol. 12 in Kühn's Edit., Leipsic, 1821-1830.

21. Sometimes called belops. See Art. *Aeschrion iii,* in Anthon's *Classical Dictionary,* p. 1,418. This formula met the approval of Galen and Oribasius.

22. Paulus Aegineta, a celebrated Greek physician born at Aegina probably in the 7th Century: he studied medicine at Alexandria and fully accepted Galen's theory of Humors. He was, however, independent in his views and has been considered the equal of or even superior to Celsus; he is the last of the great Greek physicians. Eminent as he was as a physician, he was more so as a surgeon. One of the most interesting as it is the most curious of his Chapters is that on the different kinds of arrows used by the ancients and the wounds they inflicted. His chief work is *An Abridgement of All Medicine* in seven books, which has been frequently republished. In Greek, the Aldine edition, Venice, 1528, and in Latin the Lyons edition, 8 Vo., 1567, with many learned annotations, enjoy the highest reputation. See Anthon, *op. cit.,* pp. 24, 25. Bass, *op. cit.,* pp. 205-208.

23. Oribasius, an intimate of the Emperor Julian, born at Sardis or Pergamus (the birthplace of Galen)—he studied medicine under Zeno and became court physician to Julian and who took him with him to Gaul, A. D. 355, also on his fatal Persian expedition, A. D. 363. He followed Galen so closely in his theory and practice that he was called the Ape of Galen: he appears to have been the first to bleed by scarification: his use of the oil bath was constant, and his treatment of epilepsy by drastic purgatives, colocynth, scammony, hellebore, etc., followed by occipital cupping and sinapisms had a great reputation. He wrote much on medicine, anatomy, etc., but we have no complete edition. See Anthon., *op. cit.,* pp. 924-6;; Bass, *op. cit.,* pp. 185, 186.

24. Lib. 2, c. 39, p. 40. "Take a hair of the dog that bit you."

25. Scholia, Lib. 2, c. 38, p. 29.

26. Lycium, Lib. 1, c. 114, p. 65; Walnuts, Lib. 1, c. 141, p. 87; Metuli, Lib. 2, c. 4, p. 76; Smarides, Lib. 2, c. 26, p. 106; Garnum Lib. 2, c. 30, p. 107; Canine blood, Lib. 2, c. 71, p. 114; Canine urine, Lib. 2, c. 74, p. 125; Honey, Lib. 2, c. 74, p. 126; Plantago, Lib. 2, c. 119, p. 154; Alyssum, Lib. 2, c. 143, p. 169; Onions, Lib. 3, c. 87, p. 249; Cynoglossus, Lib. 3, c. 162, p. 183; Sambucus, Lib. 4, c. 113, p. 348; Acida muria, Lib. 5, c. 13, p. 389; Terra Lemnia, Lib. 5, c. 63, p. 407; Nitre, Lib. c. 78, p. 14; Ash, Lib. 5, c. 82, p. 415.

27. Scholia, Lib. 3, c. 96, p. 52. *"a,"* privative, and *lussos* (Latin form lyssus), mad.

It may be of interest to give the views of the celebrated Van Helmont on hydrophobia, its cause and treatment. In a volume published in London in 1683 entitled: *The Paradoxal Discourses of F. M. Van Helmont concerning the Macrocosm and Microcosm: or the Greater and Lesser World and Their Union,* he discusses amongst many other things—*de omnibus et quibusdam aliis*—the Dog and his love for his Master: at pp. (78) (79) we read:

"And is it not worth our taking notice, that when these internal waters in a dog, through divers causes, as hunger, over great heat or cold, are turned the contrary way and disordered, so that he cannot take his due rest; the Image of Love he had for his Master, is turned to Enmity; and by this means he grows mad, and becomes shy of the outward water (forasmuch as he is at enmity with his inward water the images formed out of it) so that he hates it, and cannot endure it; and that because his internal disordered waters are thereby put in motion? And whilst he is thus distempered, if he chance to bite another dog, beast, or man, or if he do but touch their skin with the foame of his mouth, immediately the spirit of his perverted and disordered waters and image, doth enter into them, and causeth the same disorder in their waters, so that they in like manner become shie of the outward water.

Furthermore, it hath been found by experience, that the best means for curing this distemper is lightly to burn or cauterize the skin of the bitten man or beast with a small red hot iron or copper, and by this means to put them into a fright of fire, or else by plunging them well under water: for thus the outward fire or water spirit of the great world which stands in its due and right order, will be predominant over and master the disordered spirit of the little world, and turn about and set to right the disordered waters of the same. And is not this well worth our animadversion and consideration?

Osgoode Hall.

A Rare Medical Book.—The Japanese Correspondent of the *Journal A. M. A.,* in a letter dated March 16, 1925, writes as follows concerning a rare Dutch medical book, Kulm's *Tabula Anatomica,* which, he says, was destroyed in the earthquake in Tokyo in 1923:

The old volume was the property of Prof. Dr. Matao Nagayo, director and professor in the Tokyo Imperial University. Nearly one hundred and fifty years ago, in the Tokugawa era, the book was brought to Japan by a Dutch missionary. At that time people here knew very little about European medical science. It was therefore quite an epoch making event in the medical history of Japan when Dr. Gempaku Sugita and his friends, earnest students of Dutch medical science, went to the postmortem of a criminal held at Kozuka Common, one of the execution grounds, in the suburbs of Edo (now Tokyo) and there studied anatomy, marveling at the exactness of the illustrations in the foreign book. Dr. Gempaku's account of his difficulty in translating the book, with his poor knowledge of Dutch, is related in his autobiography entitled *Rangaku Kotohajime* (Pioneering in Dutch Science). His *Kaibo Shinsho* (New Anatomy) was the first translation in Japanese. A century elapsed, and Dr. Sensai Nagayo, father of Professor Nagayo, happened to get possession of the original book of *Kaibo Shinsho.*

He valued it a great deal more highly than any other book in his library and would not part with it, though he sent it to an exhibiiton in Dresden and another time displayed it in the Far East Tropical Medicine Congress held in Java. Great was his son's sorrow when the heirloom was burned in the earthquake disaster. But his joy was even greater when he received another copy of *Tabula Anatomica,* the gift of the Dutch medical scholar M. Van Roemer, exnaval surgeon, of Java. He has written to Professor Nagayo that he was unable to attend the Far East Tropical Medicine Congress held in Japan last autumn, and that he sent the book to promote friendly relations between Japan and his country. In his letter of thanks the professor said that his joy was as if one's dead child had come to life again. He took the volume to the annual memorial service of dead medical sages held at Kozuka Common to show it to his friends.

It is reported that after consulting with Dr. Kitasato and Dr. Miyakawa he has decided to donate the invaluable book, rare even in Holland, to the new library of the Tokyo Imperial University, now in course of reconstruction.

Music as a Therapeutic Agent.—Music as a curative factor in disease has long been discussed by physicians, but its practical use in hospitals has been generally disregarded. During the Crimean War, Florence Nightingale requested music in the hospitals, and the "corridor singing" established in 1860 in St. Thomas's and other London hospitals grew out of her belief in its efficacy.—*Nation's Health.*

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Oral Focal Infection as a Cause of Systemic Disease*

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It is my purpose to discuss briefly in this paper, the development of the theory of focal infection and elective localization and to emphasize certain findings commonly overlooked which demonstrate the mechanism involved in the production of disease in remote parts from foci of infection, and the reasons for clinical success or failure through the application of the principles involved in focal infection and elective localization.

Nowhere in medical history is the value which comes from combined clinical observation and experimental inquiry better illustrated, than in the development of our knowledge of focal infection. Notwithstanding the repeated suggestions made in previous years concerning the etiologic relationship, especially between acute localized infection and grave systemic disease, the medical and dental professions as a whole remained indifferent until Billings and his coworkers made their clinical observations and correlated experimental studies in animals demonstrating the importance of localized infections, even though small and symptomless, as common sources of various systemic disorders. The broader conception of this interrelationship, well expressed by the term "focal infection," may therefore be regarded as having originated in recent years. I count myself fortunate in having been associated with Dr. Billings and to have been able to participate in this earlier work in Chicago, and to have had the opportunity to continue my investigations in conjunction with clinicians at the Mayo Clinic in Rochester.

Aside from affording information concerning the pathogenesis of a series of diseases formerly not well understood, the work gave medical science a therapeutic principle of the utmost importance. Numerous reports on the relief of symptoms following the removal of foci of infection soon followed. The scope of this influence may be judged by the voluminous literature on focal infection which has since appeared throughout almost the whole civilized world. The benefits which have already accrued directly or indirectly are almost beyond calculation. It is not surprising that much speculation and opinion, often insufficiently supported by facts, have been indulged in, both by clinicians who often have little conception of the real significance of experimental studies and by purely laboratory workers who know so little of the clinical applications of their findings. All of the men who were associated with Billings and who did the experimental work had had both clinical and laboratory training and had intimate knowledge of the condition of the patient under investigation. Both types of study have value but this could be greatly increased if the studies in this field could be made in collaboration or in closer cooperation. Such combined study is the crying need today, in the further working out of this problem. How much more might be accomplished if the many operators in the dental field, particularly root canal experts, exodontists and dental surgeons, and specialists generally, could correlate their clinical and röntgenological findings with results of equally expert bacteriological and experimental studies in animals than by attempting to evaluate the safety of the various procedures, such as root canal work, by mere clinical observation, as is now almost universally done. Through splendid cooperation of clinicians, experimental results have been obtained in my own work that go far towards establishing important relationship of focal infections and elective localization to each of the following diseases: endocarditis, rheumatic fever, erythema nodosum, herpes zoster, intercostal neuralgia, epidemic parotitis, appendicitis, ulcer of the stomach, cholecystitis, pancreatitis, acute and chronic arthritis and myositis, neuritis and sciatica, nephritis, pyelonephritis and nephrolithiasis, iritis and other diseases of the eye, and in various diseases of the central nervous system.

The inability of certain investigators to corroborate my results would seem to be explainable on the ground of the improper selection of cases and material for study or of insufficient attention to technical details, as pointed out especially by Gay and Haden. The early results in studies on ulcer were corroborated by Hardt and Helmholz, those on iritis by Irons, Brown and Nadler, and those on cholecystitis by Brown. The elective localizing power of streptococci and colon bacilli from urinary infections has

*Read before the annual convention of the American Stomatological Association, April 5-7, 1926, at the New York Academy of Medicine.

been demonstrated by Helmholz and Beeler. The results in the study of ulcer and arthritis have been fully corroborated, extended, and controlled in my laboratory by Meisser, with streptococci isolated from infected teeth in the study of ulcer of the stomach and arthritis, by Nakamura with streptococci isolated from extirpated tonsils, and by Giordano with streptococci isolated from infected teeth and tonsils after death of the patient. My methods have been used successfully in a study of the etiology of pyelonephritis and ulcerative cystitis by Meisser and Bumpus; by Moench in a study of the etiology of endocervicitis, in which she demonstrated that this condition is often due to partial tension streptococci and may be a common cause of arthritis in women; and in a study of the etiology of chronic ulcerative colitis by Bargen. Price, working independently, has also reported corroborative results. The work on iritis and other diseases of the eye, on ulcer of the stomach and on pyelonephritis, as concerns dental foci especially, has been verified and greatly extended independently by Haden. Through strict attention to technical details he has even succeeded in producing onychia in rabbits with streptococci from foci of infection in patients suffering from multiple onychia, an example of extreme specificity.

In the systemic or secondary focus the number of organisms is usually small, whereas in the primary foci mentioned, the number is usually large. Again, there are those who say, "Why care about infected pulpless teeth or other foci of infection since the mucous membrane of the upper respiratory tract and especially of the intestinal tract harbors millions of organisms?" It is well known that normal mucous membranes are relatively impermeable to microorganisms. In order to make the analogy more nearly correct, I would venture to suggest that the nerve supply to various segments of the intestine be cut off and that certain parts be wholly or partially ligated. Indeed, abundant evidence is already at hand in which systemic disease results from improper functioning of the intestinal tract from various causes, such as reversed peristalsis, kinks and adhesive bands, infected diverticula, and especially from an appendix whose orifice or lumen has become narrowed from scar tissue, the result of localized infection, or has become plugged by fecal concretions.

Clinical observations indicate that localized infections in certain structures, such as tonsils, teeth and sinuses, are more likely to be associated with systemic effects than those in other structures, such as the lung in bronchiectasis or the urinary tract in cystitis and pyelitis. This may be due to a difference in the kind, number, or invasive power of the bacteria in these locations or to peculiarities of the tissues harboring such foci. In general, it may be said that the harm which is prone to come from foci of infection is directly proportional to the lack of drainage to the surface. The more virulent the bacteria, the less they need a gross focus for entrance, and the lower their virulence the greater is the factor of focal infection in the production and maintenance of chronic disease. However, there is much clinical evidence indicating that foci of infection, as in tonsils, are often directly responsible for making attacks of acute infectious diseases more severe than they would otherwise be, and for increasing the incidence of complications, such as in diphtheria and scarlet fever. Foci of infection in the upper respiratory tract, as in the tonsils, may also be of epidemiological importance, as is indicated by the suddenness with which the diphtheria carrier state disappears after tonsillectomy. In fact, the question of focal infection in its broader sense is as wide in its scope and as difficult of proper application as is the practice of dentistry, medicine and surgery combined. It cannot be applied by rule of thumb any more than can the healing art. A focus of infection, that for mechanical or any other reason cannot heal or drain, that is teeming with organisms, often in mixed culture, must ever be considered not only as a favorable place of entrance but also as a good place for bacteria to maintain or acquire high and particular invasive powers. Clinical observations support these contentions, and experimental results have gone far to establish them. Thus, control experiments with cultures from the buccal mucous membrane, the surface of the tonsils and throat often proved negative, the animals usually remaining well and entirely or relatively free from lesions, whereas strains from the depth of the focus produced characteristic lesions. Moreover, direct experimental proof of this fact has been obtained in the production of chronic foci by the devitalization and infection of teeth in dogs. Strains from patients with arthritis, nephrolithiasis and ulcer of the stomach, having elective localizing power, often retained this property for many weeks and months in the periapical structures of the tooth so infected, whereas several atrobic platings sufficed to destroy it completely.

The best proof of the etiological relationship of a focus of infection to a given lesion is the production of the lesion in animals with bacteria isolated from the focus in the patient.

Through the use of special cultural methods in which due consideration was given the question of oxygen tension and the injection of animals with the freshly isolated strains, extremely characteristic localizations were obtained with Streptococcus viridans from patients with subacute bacterial endocarditis, and with streptococci isolated from the joints of patients with rheumatic fever before the idea of elective localization occurred to me. The peculiar localizations obtained were considered as being due to different species of streptococci, rather than to peculiar temporary properties of different strains of the same species. It was not until ulcer of the stomach was produced in animals during my study on the transmutation of pneumococci and streptococci with socalled laboratory strains that had attained a certain grade of virulence from successive passage through animals that the theory of elective localization took definite form. The long series of experiments in animals that have been done since by myself, my pupils and independent workers, leaves no doubt that the elective localizing power of the bacteria in foci of infection largely determines the location of the systemic lesion or diseases a person with foci of infection is likely to develop. This statement should not be taken to mean that this always occurs independently of predisposing factors, however. Exposure, trauma and fatigue of certain

structures, improper food and bad sanitation, lack of sunshine, alcoholism and other excesses and heredity, undoubtedly lower the threshold of local or general resistance and thus greatly increase the likelihood of elective localization of bacteria and other infective processes. Direct intravenous injection of bacteria which had grown in foci, such as those contained in small amounts of pus from tonsils, has often been followed by localization with the production of lesions corresponding to those in the patient. Moreover, the specific affinity was sometimes so marked that it was not always necessary to give the injections intravenously; this observation answers an objection raised regarding numbers of bacteria injected in routine work. Introduction of the bacteria in suitable dose into the peritoneal cavity, the trachea, the brain, the stomach, the rectum, or into nasal cavity by packing the nose with gauze soaked in the culture, was followed by specific localization in certain instances, especially when the more virulent strains were used, thus supporting the clinical observation that systemic disease is not always attributable to a demonstrable focus of infection.

In order to remove all doubt regarding the importance of latest foci of infection as an important factor in the production of disease, Meisser and I produced latent foci by devitalizing and infecting the teeth in dogs, closely simulating the conditions often inadvertently induced in persons by dentists. Nephritis, nephrolithiasis, ulcer of the stomach, spasms of the diaphragm and other muscles, and chorea, have been produced in this way with cultures isolated from patients with these respective diseases, and in each instance the causal relationship of the organism introduced into the teeth to the metastatic lesion, has been established by the demonstration of the organism in the lesions and focus and by the elective localizing power of the strains isolated at the end of the experimental period. During these latter experiments another important fact was noted. The bacteria in the induced latent focus of infection, besides producing the characteristic disease, appeared to exert general deleterious effects. The animals lost weight and became more susceptible to intercurrent infections, although they were kept under conditions identical with those of control animals. In other words, conditions of hygiene and diet that were adequate to maintain weight and health in normal dogs were inadequate for dogs with latent foci of infection. The harm, therefore, from improper food or sanitation may be greatly exaggerated by bacteria harbored in foci of infection, a point not yet sufficiently considered.

In my experiments still other important facts have been brought to light. Streptococci having the same specific localizing power were demonstrated in more than one focus in the same person simultaneously, and in some instances at intervals in one or more foci over a long period. These experimental results are in harmony with the common clinical observation that persons affected with a particular disease, such as iritis, ulcer of the stomach or arthritis, are prone to have recurring attacks of the same disease, which often tends to become chronic in character. In the light of these facts, the possibility that the tissues or fluids of the body afford the conditions on which the development of the peculiar localizing power of bacteria depends, must be seriously considered. The hereditary tendency observed in some of these diseases also points in this direction, as does the repeatedly made observation that a higher incidence and more marked lesions occur in the characteristic organ or tissues of animals infected with the organisms from foci at the time of acute attacks or during acute exacerbations in chronic affections, than during quiescent intervals. Moreover, well marked differences in the incidence and severity of specific lesions were noted at different seasons of the year, especially in chronic ulcer and arthritis. During the colder months when exacerbations and an increased incidence of these diseases are so common, the incidence of positive results in animals was appreciably higher than during the warmer months, when patients were relatively or entirely free from symptoms.

The fact that bacteria of the same species localize electively, depending on the degree of virulence or other acquired property, is no more remarkable than the fact that bacteria of different species tend to localize in particular organs or tissues. The loss of virulence of streptococci or other bacteria on artificial cultivation and its increase on passage through animals, are well recognized. The change in localizing power likely occurs for the same reason.

The reasons for the elective localization of bacteria are still obscure. No doubt the same principles apply that determine the localization or pharmacological action of chemicals and drugs. Indeed, my experiments in ulcer of the stomach and epidemic hiccup strongly support this hypothesis. It was found that strains of the streptococci from patients with ulcer which had elective affinity for the mucous membranes of the stomach and which produced ulcer on intravenous injection elaborated a poison or toxin within the bacterial cell and in the broth which had specific damaging effects. Injection of the washed dead bacteria and filtrates of actively growing cultures produced hemorrhage and ulcer of the stomach without inciting lesions elsewhere. Even more striking were the results following intracerebral injection of living cultures of the streptococcus from patients with epidemic hiccup, the dead bacteria, and filtrates of freshly isolated cultures. In each instance, spasms of the diaphragm or other muscles was produced. Moreover, filtrates of nasopharyngeal washings and pus from tonsils at the time of attacks sufficed to provoke spasms, whereas similarly prepared filtrates after recovery were without effect. Aside, therefore, from the specific attraction or tropism of certain cells or tissues for certain bacteria, their localization and growth in certain tissues are dependent on the production of toxins or poisons which damage those tissues specifically. The specificity of some of the strains was so marked that intravenous injection in pregnant rabbits was followed by localization and lesions similar in fetuses and mother rabbits. The view held by obstetricians that foci of infection predispose to miscarriage or to the ill health of the fetus is supported by clinical and experimental findings. Many facts indicate that diseases of the heart and vascular system may commonly be attributable to focal infection and elective localization. Thus, intra-

venous injection of a streptococcus isolated from the pus expressed from pyorrheal pockets in a patient who had had repeated attacks of muscular rheumatism and who was suffering from attacks of syncope due to a damaged His's bundle and inspired myocardial conduction besides producing lesions in skeletal muscles, produced arryhthmia of the heart, with lesions in the myocardium including the His's bundle. Marked lesions in the myocardium of animals sometimes follow the injection of streptococci freshly isolated from pulpless infected teeth and after repeated passage through animals. Haden reports similar results with strains from infected teeth of patients suffering from myocardial disease. The farreaching deleterious effects which focal infection may have even in conditions generally thought to be hereditary in origin, are indicated especially by the work of Talbot, who says, "The evidence tends to show that most congenital malformations which are the results of lack of embryonic development are due to injury to the placenta during the early weeks of pregnancy; that the injury to the placenta is due to maternal hematogenous infection of the blood vessels of the placental site, and that the source of the hematogenous infection is generally to be found in the teeth and tonsils."

The practical applications of the principles of focal infection and elective localization are fraught with many difficulties. Systemic diseases, once thoroughly established and often associated with anatomical changes that in themselves may continue to give rise to symptoms even though there are no organisms present, may continue after all evident foci are removed. The instances of cure or arrest of progress in systemic diseases by the removal of foci of infection are so numerous that search for and removal of all foci possible is indicated in almost every case of serious systemic disease, for which there is good clinical or experimental evidence of focal origin. In a given case the variations in the invasive power of the bacteria, the wide differences in natural or acquired resistance to microbic invasion in different persons and at different times, the age and sex, the history of previous attacks, the duration and character of the disease from which relief is sought, and hereditary tendencies, must all be considered in determining when and whether all or certain foci should be removed, or whether the condition is indeed of focal origin.

To arrive at a correct diagnosis and to manage focal infection properly often requires the advice of specialists in the various branches of the healing art, as well as that of a competent bacteriologist. The opportunities of the dental profession have been greatly increased through the better understanding of the problem of focal infection in general and especially of the dental area. Many problems are still unsolved but enough have been solved to prove that prevention and elimination of oral sepsis should henceforth take precedence over preservation of the teeth, which has been practised in the past, almost wholly for mechanical or cosmetic purposes. Preventive measures should begin in childhood with a view to obtaining proper development of the teeth and oral cavity. The principles underlying various procedures for the prevention and cure of infections of the gums and enveloping membranes of the roots of teeth are fairly well understood and effectively applied by many.

Infections of the dental pulp, pulpless teeth and apical abscesses are theoretically the most dangerous of the various forms of dental foci. They are usually free from symptoms and hence unsuspected. They are situated in osseous tissues which allow no expansion. They can drain only into the circulation and are exposed to pressure transmitted by the teeth during mastication. The infection remains active for years and the bacteria are not encapsulated as is usually assumed, but are found in areas of active inflammatory reaction where the formation of new bloodvessels affords drainage into the circulation or lymph stream.

The bacteriological study and the animal experiments carried out by myself, by Meisser and others working with me, by Hartzel and Hemici, by Price and especially by Haden, prove that vital teeth free from caries are usually sterile but that practically all pulpless teeth removed from patients are infected and that with the organisms isolated, usually streptococci, a wide range of lesions or the disease from which the patient is suffering may often be reproduced in animals. The infection in pulpless teeth is usually present whether or not the teeth show rarefaction in the röntgenogram. Moreover, it does not seem to make much difference whether the root canal had been properly filled or not. The idea of focal infection has often been wrongfully condemned because one or more pulpless teeth that showed rarefaction had been removed from a patient without benefit when pulpless teeth that showed no rarefaction were thought to be sterile and left untouched, or when foci elsewhere were not even considered. Again, simple extraction of infected teeth while usually, is not always, sufficient to eliminate infection in the jaw. This seems peculiarly true if teeth have been rendered pulpless artificially. In the individual cases that method of removing infected teeth should be chosen which assures elimination of the infection, which is least destructive, and which is associated with the lowest incidence of constitutional reactions manifested by fever and exacerbation of the systemic condition. Exacerbation following extraction of teeth should be regarded as experimental proof that the infection around the teeth removed has causal relationship and that in all likelihood not all of the infected tissue was eradicated during the operation.

A tooth from which the pulp has been removed or which has died from infection seems to become a place of lowered resistance to bacterial invasion. The methods generally used in root canal work are certainly not adequate to prevent subsequent infection. The wholesale devitalization of teeth and the filling of root canals, often for trivial reasons as practised in the past, considered in the light of our present knowledge, should be regarded as veritable experiments on human beings and must cease. It is greatly to be hoped that an efficient method may be found that will not only sterilize pulpless teeth and periapical tissues that have become infected, but prevent subsequent infection, especially of the periapical tissues. The fulfilment of this latter requirement seems almost unattainable. Until this has been accomplished it would seem wiser to remove teeth

that have become infected or that require extirpation of the pulp than to retain them and have them become a source of infection later. No one deplores more than I the ruthless extraction of teeth which has been practised in some instances as a result of the work on focal infection. Vital teeth free from pyorrhea should never be extracted except as it becomes necessary for restorative work. The extraction of pulpless teeth seems to me to be indicated even regardless of the appearance of the röntgenograms, in cases of serious systemic disease for which no other focus can be found. Good effects are especially prone to follow in cases in which the teeth were heavily infected and in which it is possible to reproduce the disease in animals with the bacteria isolated. The results from the use of vaccines prepared from the strain proved to be guilty are also often strikingly favorable. Since the diseases which are commonly the result of focal infection are usually due to streptococci, immunity to which is of short duration, not too much should be expected from the use of specific vaccines or serums. They cannot take the place of removal of a cause, the focus.

The removal of foci of infection, particularly if the focus is situated in tissues which may be readily spared, such as tonsils and teeth, should be practised in certain instances not only as a curative but as a preventive measure. General deleterious effects, including lowered resistance to intercurrent infection, as well as specific localization, occurred in dogs in which focal infection had been induced artificially in teeth. This may be regarded as furnishing an experimental basis for the improvement in general health so commonly observed, and for the favorable results obtained in the treatment of diseases such as diabetes, syphilis, and pulmonary tuberculosis following the elimination of foci of infection.

Extraoral Method of Stomatological Röntgenography

*A New Method of Stereoröntgenography of the Jaws and Teeth**

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EXTRAORAL METHOD FOR JAW RÖNTGENOGRAPHY

In order to obtain röntgenograms of the jaws, along with the teeth, from the angle of the maxillary bone to the median line, the extraoral method is applied. The only technical difficulty met with here is the necessity of removing the shadow of the opposite side of the maxillary bone as well as that of the vertebral column. This difficulty is overcome by directing the chief ray under the border of the opposite maxillary bone (Fig. 1) or between the ascending ramus of the maxillary bone and the vertebral column. This can be done in a simple manner if we wish to take a röntgenogram of the skull. To indicate the direction of the chief ray we have merely to close one eye and place the other in such a position as to observe the part of the jaw we wish to appear conspicuously on the plate (Fig. 3). Then we set the focal point in the place of the eye and obtain a picture of the jaw, unconcealed by undesirable shadows.

It is more difficult, however, to discover the right direction of the centre ray in dealing with living subjects, as the skull is covered with soft parts which render the ascending ramus and the spine invisible. This difficulty disappears, however, when we indicate a horizontal section of the skull on the diagram, which is affixed to the cap on the patient's head (Figs. 4 and 5). The direction of the centre ray, the position of the plate, and the parts of the skull to appear on the exposure are all indicated by the same color on the diagram.

We distinguish three chief places on the jaw that may be all taken in one exposure: the region of the front teeth (I, oblique exposure), that of the premolars (II, oblique exposure), and that of the molars together with the ascending ramus (III, oblique exposure).

In making lateral exposures it is necessary to aim the chief ray under the border of the opposite jaw, so that the median plane of the patient's head is parallel with the plate. The central ray falls at an angle of 60° (Fig. 1).

The typical exposures are shown in Fig. 6, which should be used as follows: in the column of the first vertical line choose the most suitable exposure, showing the part of the jaw it is desired to obtain. The second and third vertical columns show how the head is turned to suit the position of the plate and the direction of the central ray. By using this diagram we obviate failure, save time as well as plates, and once the exposure is obtained, we are able to repeat it with the greatest precision.

The correct direction of the central ray may be more easily obtained by means of a triangle, of which one angle is 70° and the other 60°. The edge of the triangle was placed at the height of the open mouth. (Fig. 7.)

Extraoral technic becomes so simple when the diagrams and cap are applied that the merest laboratory assistant may perform it quite correctly by following the directions of a physician.

NEW METHODS OF STEREORÖNTGENOGRAPHY OF THE JAWS AND TEETH

The stereoröntgenography of the jaws is of use in localizing foreign bodies or missiles imbedded in the jaws, likewise unerupted impacted teeth. It helps us also to examine more exactly the shifting of fragments in jaw fracture, and to determine the lines on extraoral röntgenograms of the maxillary bone.

The technic of the stereoröntgenography of the jaws corresponds to that applied to the other organs, being based on the following principles:

*Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

1. The head ought to be in the same position for the second exposure as for the first.

2. The target of the x ray tube is shifted the space of the pupil of the eye, i. e., seven and one half cm., and the chief ray should be directed on the same point of the object as the first exposure.

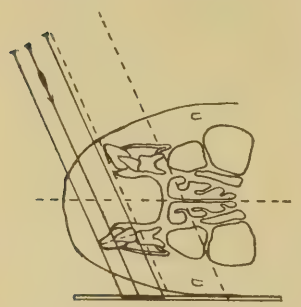

FIG. 1.—Lateral röntgenogram. The chief ray runs under the border of the opposite maxillary bone.

In practice the following rules should be observed: first, the chief ray is directed as if for a customary exposure, after which the target is shifted to the left side, half the space of the eye pupil, i. e., three and three quarters c. m., for the first exposure, and seven and one half cm. for the second, the central ray being in both instances aimed at the same point of the plate.

In order that the central ray (i. e., the ray passing through the principal part of the object, which part must appear in the röntgenogram) may be both an axial and a central ray, i. e., a ray passing through the axis as well as through the centre of the compression cylinder, the tube shield is tilted to one side to a certain angle of divergence, the degree of which depends on the distance of the target from the plate.

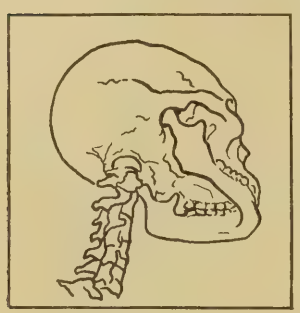

FIG. 3.—Visualization of skull at an angle allowing ray to focus on part desired.

The angle of divergence is the angle formed by the chief ray both in the first and second exposures, the chief ray being in both exposures aimed at the same point of the object (Fig. 9). This angle answers to the angle to which the tube shield is tilted, provided the movement is executed only in one direction from the normal position; should, however, the shifting motion be made to both sides, the inclination would amount to δ. If the distance between target and plate FP=fifty cm. then δ = 40°; similarly 40 cm.= 5.5°, and 30 cm.=7.5°.

FIG. 4.—Cieszynski's cap with diagram. The horizontal line on the cap is placed parallel with the Frankfort plane, the vertical lines on both sides of the cap running in a transversal plane. The median line runs through the sagittal plane. Published 1911-12.

EXTRAORAL STEREORÖNTGENOGRAPHY OF THE JAWS

The Albers Schoenberg compression cylinder, as also the Wappler tube stand (Fig. 2), is provided with an apparatus for inclining the tube. Fig. 2 shows how this apparatus is used in taking stereoröntgenograms.

Let us suppose that the distance from the target to plate FP is fifty cm.; first of all fixing screw a a is set upon the hinder part of the carriage at 4° on both sides, so that the tilting of the tube shield is automatically stopped at an angle of 4°. We now

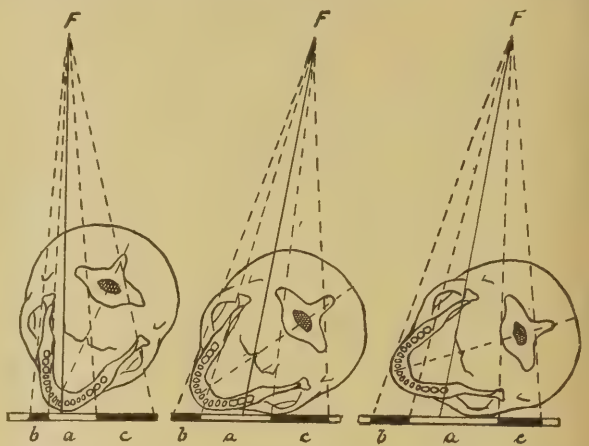

FIG. 2.—I, II, and III, oblique röntgenograms of the maxillary. a, part of the maxillary visible on the röntgenogram; b, opposite side of the maxillary bone; c, vertebral column; F, F, F, focal points of the target.

place the tube shield perpendicularly to the carriage, i. e., at point O, so that the chief ray is directed for a normal exposure. The head has also been appropriately posed and held in position. We now set the

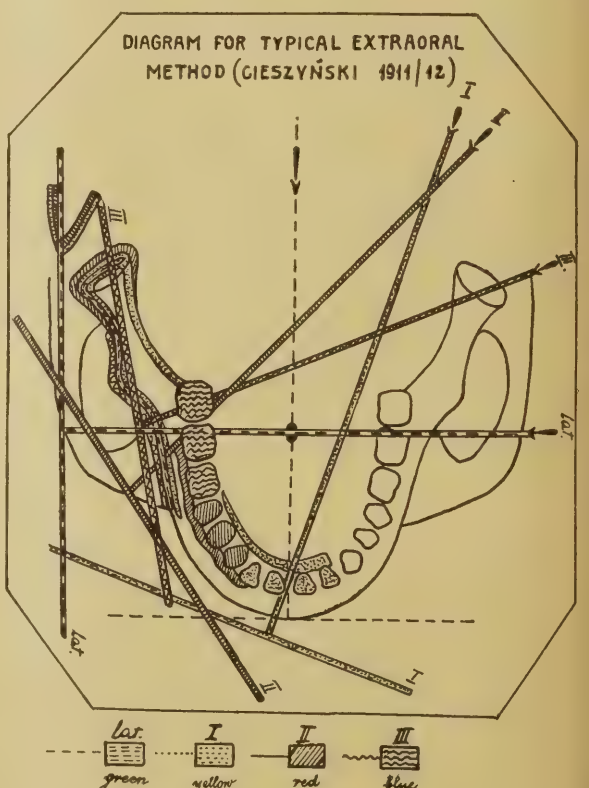

FIG. 5.—Diagram for Cieszynski's typical extraoral exposures. Three fourths normal size. Published 1911-12.

sliding bar S on point O (this sliding bar allows the tube shield to move automatically three and three quarters cm. or seven and one half cm. as desired), after which we incline the compression cylinder to the

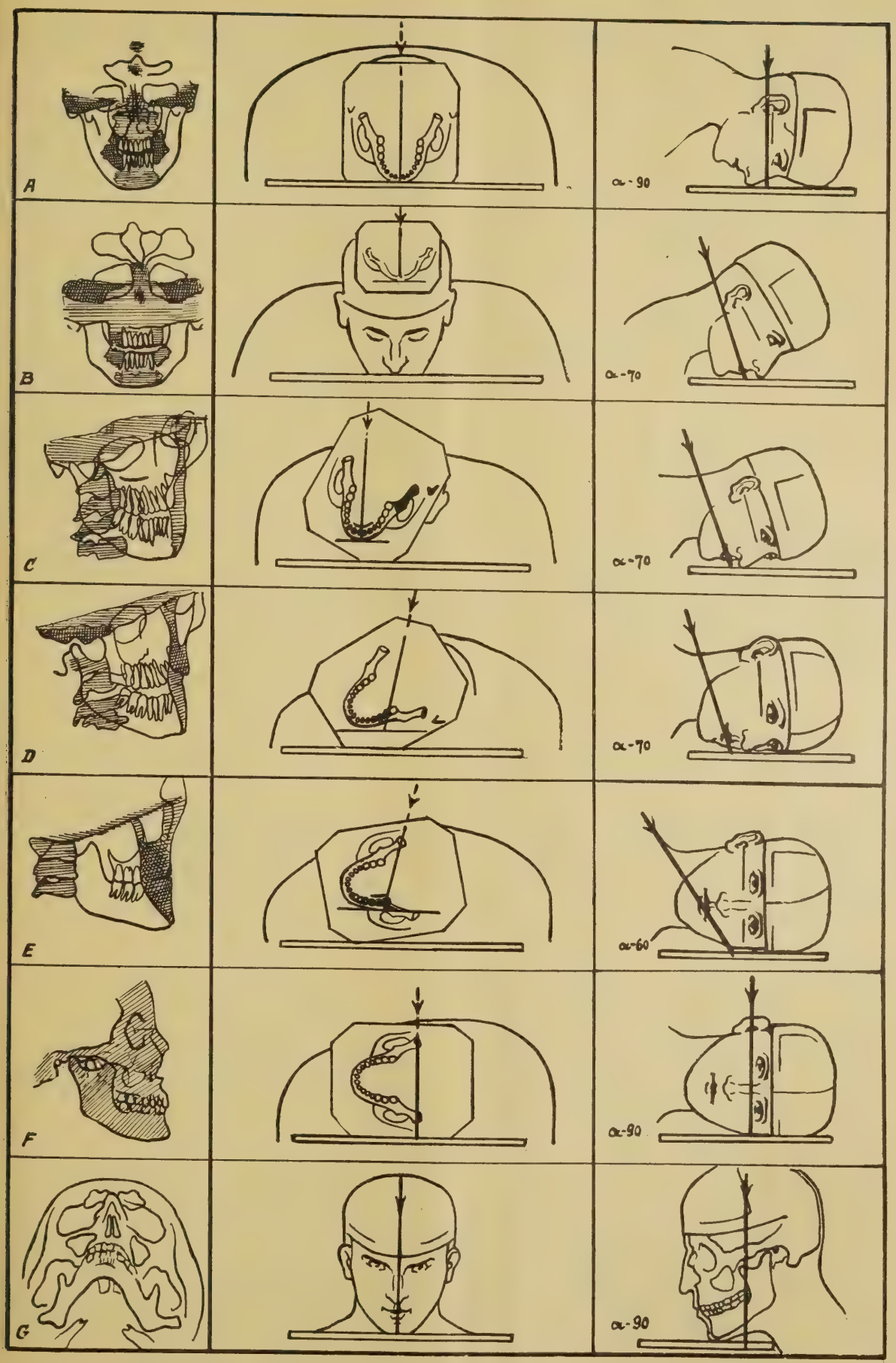

FIG. 6.—Exposures: A, occipitofrontal; B, occipitomental; C, first oblique; D, second oblique; E, third oblique; F, lateral condyloid process, angle of 50°; G, condyloid process.

left for the first exposure. After charging the plate we shift the carriage seven and one half cm. to one side for the second exposure. The distance is indicated automatically by sliding bar S.

As the indicator of the chief ray is wanting in the

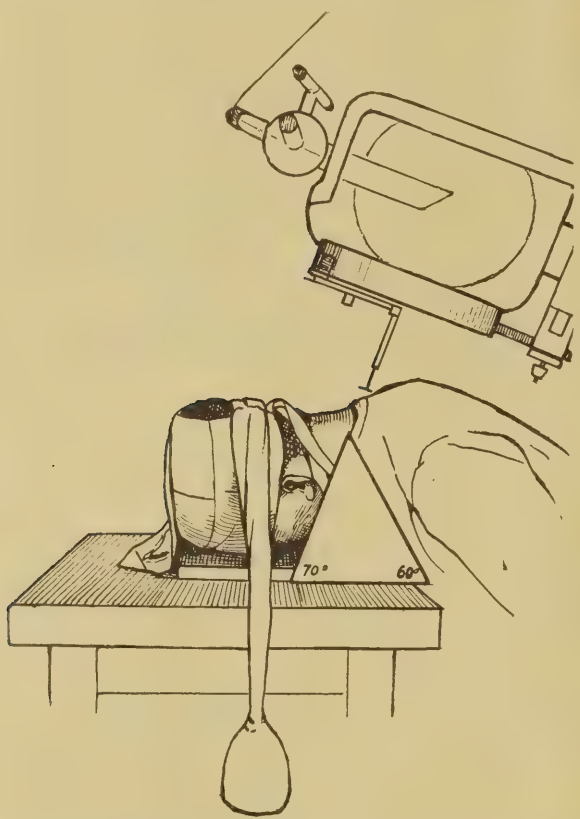

FIG. 7.—Oblique exposure I. Position of head and direction of chief ray seen from side. The indicator of the chief ray should be directed according to the edge of the triangle placed at the height of the open mouth.

tube of Wappler's stand, the deficiency may be supplied by drawing along the compression cylinder four parallel lines, extending to the axis, at intervals, as shown in Fig. 11. Line a is the directive to be followed when sighting from above, line b, when sighting from the side.

Stereoröntgenograms may also be taken by using an ordinary tube stand, in the following manner:

Method I.—On the diagram of my cap for extraoral röntgenograms, and alongside the line indicating the direction of the chief ray, we trace another line a, which forms the angle of divergence. With distance FP=fifty cm., this angle amounts to 8°, Fig. 12.

In order to take the second exposure the chief ray is directed according to the line indicated for angle δ On the diagram this line is indicated by the addition of the letter a. The object maintains the same position as in the first exposure.

Method II.—The tube stand remains in the same position for the second exposure as for the first, with this difference only that the patient's head is turned far enough to permit of the respective a line coinciding with the direction taken by the indicator of the chief ray. We assume, then, that for the obtainment of an effective röntgenogram it is immaterial whether we incline the tube shield to angle δ, or turn the patient's head to that angle, turning it towards the chief ray, which maintains the same position as in the first exposure, while the Frankfort plane of the head ought to be in the same position in relation to the plate.

The change of plates during the taking of the two exposures is done by means of the cases used for stereoradiography. As soon as exposure has taken place the photographic plates should be immediately inspected by means of Wheatson's stereoscope, or, after making a reduction, by an ordinary hand stereoscope.

INTRAORAL STEREORÖNTGENOGRAMS

In 1911 I made the first attempts at obtaining intraoral stereoröntgenograms on films in the bite position. I shifted the tube six to seven and one half cm. to one side, but without tilting it to divergence angle. I did not attach much importance to these experiments, however, and it was not till I met with a description of Ivy's handbook, of the technic of intraoral röntgenograms, that I took up the problem again, with the intention of simplifying the technic of röntgenography while using the ordinary tube stand.

Ivy executes his intraoral röntgenograms on the basis of the method applied in the case of extraoral röntgenograms, making use of Wappler's tube stand. The tube shield, however, is not shifted transversely (i. e., to the left and right side of the maxillary bone), but from the vertical. In this way we obtain such a view of the object as if the patient had been in a recumbent position, and not sitting.

My own procedure is as follows: I make a point

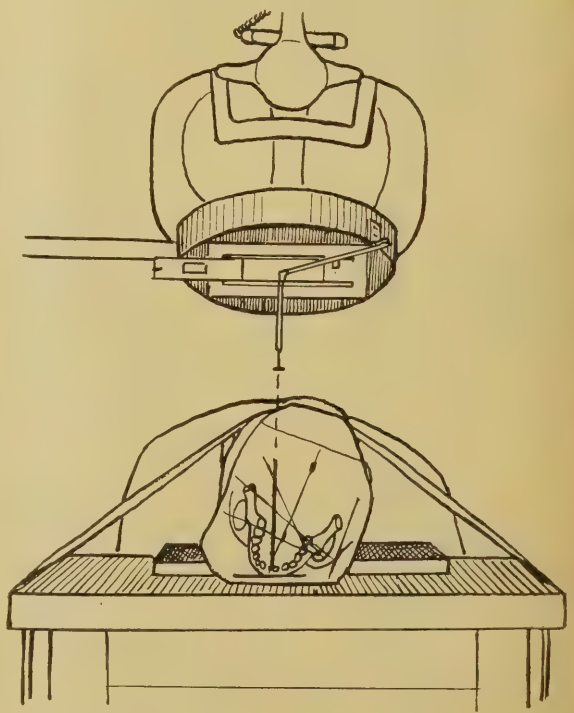

FIG. 8.—Oblique exposure. The indicator of the chief ray is placed in the direction of the line on the diagram.

of filming the intraoral stereoröntgenogram in the bite position, this being the easiest way of introducing the film between the teeth. The head remains in the same position for both exposures. By this method we obtain on our photographic plate also the lateral teeth, i. e., the molars in a mesial eccentric projec-

tion, the roots of the premolars and molars being consequently isolated. The angle of divergence is thirty to forty cm., 15° calculating the distance of the target from the film. Only the lower molars are röntgenographed on a film adhering to the alveolar process.

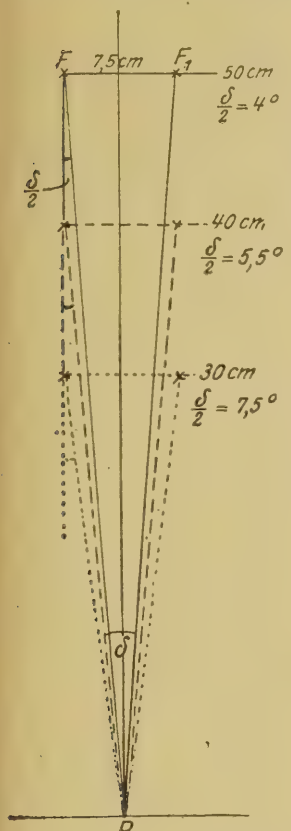

FIG. 9.—Angle of divergence, with distance between target and plate. F. D. equals 30 cm., 40 cm., and 50 cm.

The directing of the chief ray for intraoral röntgenograms is executed by following the diagram of bite plate in Fig. 13, which may easily be cut out in brass foil. Direction I and Ia are for the front teeth, while II, IIa, III and IIIa are for laterals. The plate is purposely cut to a somewhat smaller size than that of the normal dental arch, so that it may also be used for jaws of smaller dimensions.

M is a small band soldered to the obverse side of the plate; it indicates the depth to which the plate is inserted in the mouth, the plate being introduced far enough for the band to touch the exterior side of the lower teeth. The direction of the chief ray is engraven on both sides of the plate. Line F shows the course of the edge of the film, which is placed *upon* the plate when the röntgenogram is to be taken. To take the second exposure the film is taken out of the mouth together with the plate, while the head remains motionless, leaning upon the head support, after which the second film is placed in the mouth. The same apparatus is used both for the lower and the upper teeth. For röntgenograms of the lower teeth the plate is merely turned over, so that band M touches the outer side of the upper teeth, the film being placed under the plate. Two exposures are made at distance FP thirty cm., the chief ray, in the first instance, passing through line I, in the second, through line Ia. Röntgenogram II is taken either by aiming the chief ray in the direction indicated on the plate by the addition

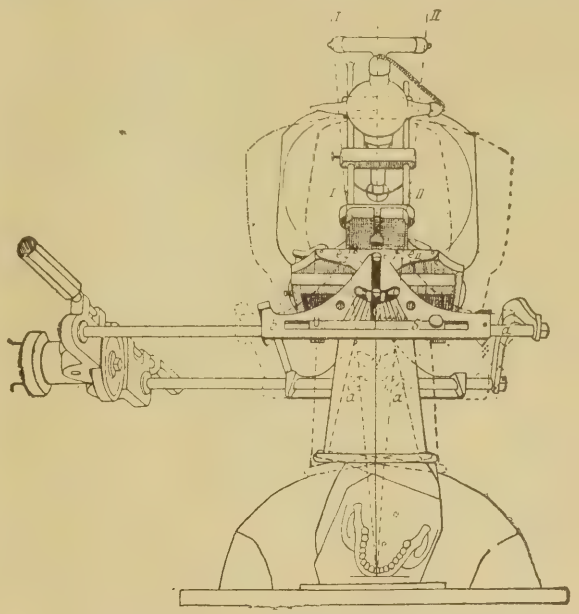

FIG. 10.—Stereoradiography of the left side of the jaws. 1, exposure taken from a certain angle by Wappler's tube stand, only the tube bracket and carriage of the stand are shown on the sketch. Carriage b on which the tube shield may be inclined from swivel point e, moves to and fro on double rails. This carriage contains an angle-meter for fixing the angle of divergence. The offrail has two fixing screws, aa, which may be set to suit the given angle of divergence. These screws prevent further inclination of the tube shield. The carriage runner nearest to us contains a slot in which the sliding bar is moved along the slot of the runner. This sliding bar permits the carriage being shifted no more than seven and one half cm., either to right or left, so that if we fix the mark of the sliding bar to point 0 on the angle meter by means of the screw, we can move the carriage only three and three quarters cm. to right or left. The fixing screws mentioned, aa, and sliding bar s, enable us therefore to shift the tube to the side and to incline it to any desired angle of divergence by one movement during the second exposure. On the patient's head is seen Cieszynski's cap with diagram. The posing of the head by means of the slit band is not shown in the sketch, Fig. 2.

of the letter a, the head remaining in the same position as in taking the first exposure, or else by turning the head round to the angle of divergence, turning the guiding line on the plate in the direction of the indicator of the chief ray, but without shifting the position of the tube stand. In turning the patient's head, however, care should be taken that the Frankfort

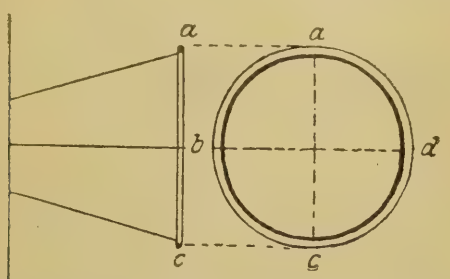

FIG. 11.—Substitute for chief ray indicator. Lines a, b, c, d, are drawn along the compression cylinder, so that the conical cylinder is divided into four even parts. The upper line, a, shows the direction in which the chief ray must be aimed if we take our bearings from above, while lines b and d are to be taken as directives if we sight from the side (Cieszynski).

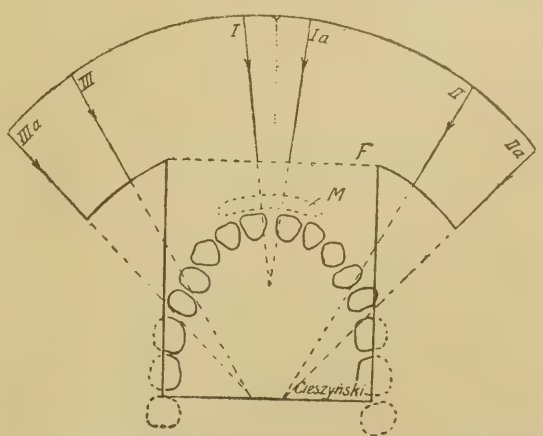

FIG. 13.—Cieszynski's diagram of plate for intraoral stereoröntgenograms (one half natural size).

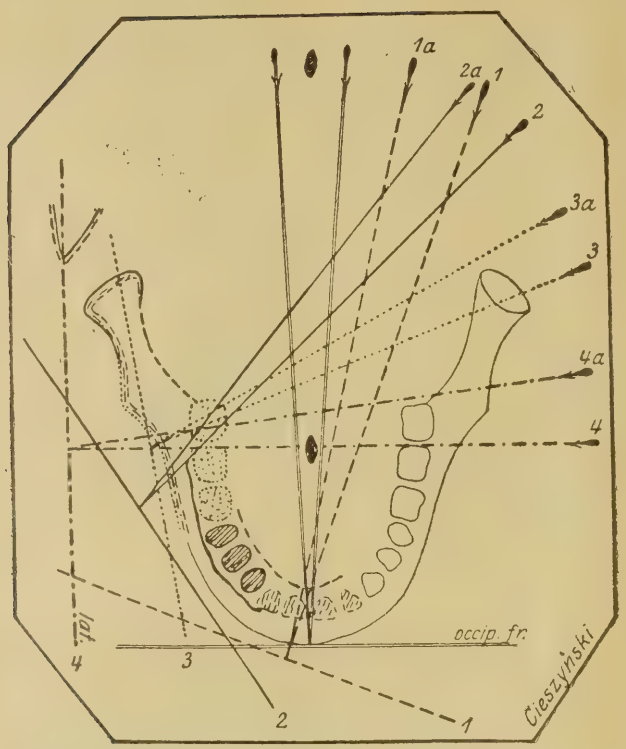

FIG. 12.—Cieszynski's diagram for directing chief ray for extraoral stereoröntgenography. On the diagram we see the position of the plate and the appropriate direction of the central ray for the various kinds of exposures, as also the angle of divergence for distance, FP, fifty c.m. The diagram becomes more lucid by coloring the various lines as follows—red, yellow, blue, remains black.

plane, traced on the face, should preserve the same position in relation to the level, and that the head support should not be moved.

The angle of inclination of the chief ray, in relation to the Frankfort plane, remains the same as in ordinary radiography, i. e., we again make use of Cieszynski's diagrams for intraoral method (4), in which the angles of inclination are given both graphically and in arithmetical figures, whether for jaws of normal build or otherwise.

The films being exposed and dried, we now place them on a glass or celluloid plate of the size of an ordinary stereoröntgenogram (nine by eighteen cm.). Then we divide the plate into two equal halves by means of a pencil line drawn through the centre of the glass, after which we mark off two points, one on each side of the dividing line, and at three to three and one half cm. from it. We now turn over the glass plate and place the röntgenograms upon it, one on each side of the aforesaid dividing line.

In looking at this röntgenogram we must imagine that we have obtained a view from the outside of the maxillary, wherefore we place the röntgenogram on the left side, on which the right side alveolar process is more extensive, that on the left side being curtailed, with overlapping teeth. The röntgenogram taken from the right side shows the converse conditions. In order to obtain regularity in distance on the röntgenograms, we first of all fix upon either the same edge of the tooth, or a filling, or any other landmark in the centre of the röntgenogram, provided that it correspond exactly; then we place them in such a manner that these guiding points shall tally with the marks made on the obverse side of the glass plate, at the same time trying to make the two pictures correspond as to position.

Having thus indicated exactly the position of films, we now affix them to the glass plate by strips of gummed paper, and having mounted them like magic lantern slides, we are able to examine them through an ordinary hand stereoscope, the most suitable being one with covered sides and dulled bottom.

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The Problem of Modern Stomatological Education*

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As it is recognized today man's health depends upon the harmonious and perfect function of each of his organs and as it is universally agreed—thanks to our medical knowledge—that the pathological condition of but one organ influences the whole organism and may destroy it, there is no doubt, that only such one is enabled to treat dental diseases who is fully acquainted with the functions of each part and of each organ of the whole organism and knows the effects of dental diseases upon the surrounding tissues and upon the whole organism, that is, the physician.

The socalled dental treatment has developed—during half a century—to dental therapy, to stomatology, that is, to a medical branch. Its purpose is not only a technically perfect filling, or an inlay, or a denture, but in recognition of the fact that he is working on the living organ of the living organism, the practitioner must pay all his attention to the medical principles and must be guided by medical indications. In consequence it is not limited merely to dental treatment, but it includes the whole

*Read before the annual convention of the American Stomatological Association, April 6, 1926, at the New York Academy of Medicine.

oral cavity, its task is the conservation and the re-establishment of oral health.

It results from these statements that every physician ought to be acquainted with dental diseases, the disturbances resulting from them in the oral cavity and their influences on the whole organism, that is, that every physician, in a certain degree, should be a dental surgeon, inasmuch as he is also a surgeon and an oculist. Further, it results that the dental surgeon, the stomatologist, ought to have a complete medical education like every other specialist, that is, that he ought to be a physician.

If we ask after these statements what may be the best method, the best way, of special instruction, we must divide the problem into two groups: 1. We must inquire in what manner the practitioner may acquire dental instruction, at least in the same degree as he has acquired knowledge in other special branches. 2. We must discuss the special instruction of the dental surgeon, the stomatologist. Our suggestions comprise, 1, the general medical instruction, and 2, the problem of special instruction.

At this time my suggestions will be but statements of principles, reserving further details for a later occasion.

I. When graduating a student with the diploma of M.D., the university assumes a knowledge in every branch of medicine. He should be able to recognize various diseases and be able to treat each patient where special treatment is indicated. But in verity the facts do not correspond with this necessity, as in general one may obtain the diploma of M.D. without being able to make a correct diagnosis of periostitis, otitis media or laryngitis or to treat these conditions adequately. Today, there are many doctors of medicine without any knowledge in odontology, nor in otiatrics, rhinology or laryngology, excepting those who have acquired some knowledge by private diligence and study. For a broader medical culture, dentistry (also otiatrics, rhinology, and laryngology) should be obligatory subjects of both study and examinations so far as it accords to the general practice of a nonspecialist. That is especially indicated and urgent as regards odontology. The general practitioner must in every case possess a wide knowledge of dental diseases, of their pathology, etiology, prophylaxis, their influence upon the oral cavity and the whole organism. He must be able to recognize the diseases of the mouth, to perform tooth extractions and have some knowledge of possible complications.

I judge therefore the time will come when the different chapters of stomatology such as pathology and therapeutics of dental diseases, stomatological surgery of the mouth, oral diseases and their influence on general health, and oral symptoms in constitutional diseases, will be obligatory branches of medical study and subjects of obligatory examinations. According to these principles, the general practitioner will be enabled to recognize the connection of some internal, surgical or neurological situations with dental diseases.

I am fully aware that the introduction of obligatory dental studies into the plan of the medical curriculum is connected with many difficulties, but it is not impossible, seeing that stomatology is already in the teaching plan of some universities, in Italy for example since 1924, and in Austria since 1925, where the study and examinations in stomatology are obligatory.

II. As to the special instruction, two questions are put in the front rank: 1, preliminary education, and 2, professional education.

1. Preliminary education. Today the question in the entire world has been decided in favor of a higher preliminary education (equal to a B.A.).

The only basis of every medical specialty, also of stomatology, is medical thinking which may only be acquired by the route of being a general practitioner. Whoever is of the opinion that this is superfluous for stomatology, gives testimony that he is not aware of the demands of modern stomatology and does not know how important a knowledge of anatomy, physics, physiology, chemistry, histology, pathology, pharmacology, toxicology and bacteriology, is for the stomatologist.

Frequently it is stated that some medical branches are not of importance to the stomatologist. But likewise many branches are apparently useless for every other medical specialty, such as obstetrics and gynecology for the oculist and otologist or psychiatry for the surgeon. When regarded from this point of view the question is entirely erroneous, for as shown, general medical knowledge is the indispensable base of every special medical branch and though the specialist may not make use of it in the practice of some medical branches, he is, nevertheless enabled by them to recognize the inseparable relations in the organs of the whole organism, to understand and to appreciate them and to increase his medical judgment. And continuing this thought we may ask, for what purpose the physician should learn algebra or history.

2. Special instruction of course, can only be given in schools established for this purpose. In organizing schools of this kind two special points of view are important: There ought to be the possibility of learning this branch of medicine in its general medical relations in the same manner as surgery, otiatrics, laryngology and other subjects are taught in medical institutes; the institute must afford every opportunity for the most thorough instruction in the technical part of the branch.

It must be demanded that, besides odontography, special physiology, histology, bacteriology, general metallurgy, special physics and chemistry of the material for fillings, dental pathology and therapeutics, the therapeutics of oral and dental diseases, oral surgery should also be taught in these institutes. A division of these institutes into some departments cannot be avoided. Besides the different laboratories there are necessary: departments for radiography, conservative dentistry, oral surgery and others; furthermore, a department with sufficient beds for lying in patients.

Besides the actual work of the stomatologist's other practical remedies such as prosthetic work should be taught as perfectly as possible. The practical stomatologist should not make these appliances himself, for this is the task of the mechanical den-

tist, but he should be able to make them if necessary and be able to appreciate them and to indicate and employ them in his practice.

For attaining all these aims, the curriculum for this special branch should comprise at least two years' study.

RÉSUMÉ

1. The exercise of our special branch, as a medical branch, should be reserved for the physician in the interest of public health.

2. Every general practitioner should acquire some knowledge in this special branch.

3. For this purpose stomatology should be an obligatory subject in the curriculum of the future medical practitioner. It should be taught in a manner to enable the physician to recognize in his practice the relations of internal, neurological, surgical and other conditions to any dental disease. He should be able to appreciate them and to give, at least, first aid to dental patients.

4. The specialist should begin his special study only after having obtained the diploma of M.D.

5. The real special instruction should be given during two years, only in special university clinics in the same manner as to the surgeon, the otologist and other specialists. There must also be afforded the opportunity of learning the technical part of our special branch.

In Hungary, stomatology has occupied its place among the medical special branches. Odontology has been taught as far back as 1845, by an extraordinary professor at the medical faculty of the University in Budapest. In Hungary only the physician can practise a special branch of medicine and, among the fifty-five hundred practitioners in our country, there are eleven hundred stomatologists. After having obtained the diploma, the physician is obliged to pass one year in a reputable special clinic or hospital for special study. Only after this year in a stomatological clinic is he an authorized specialist, a stomatologist.

All this is not sufficient and cannot be regarded as a proper measure. It must be our aim, 1, that the general medical curriculum in our country should include an obligatory study of the relative special branches which ought to be taught and examined; 2, that the future stomatologist, after having obtained the diploma of M.D., be obliged to pass a final special examination after a special study of at least two years.

Stomatology in Italy*

PROFESSOR ARTURO BERETTA, M.D.

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The Italian school, not having a real dental past, nor private or social interests to guard, was entirely free to choose its own legislation founded upon the modern scientific conception of dentistry.

It maintains that dentistry is rightly a medical branch, and therefore in the sanitary and scholastic legislation must be regarded at the same level of the other medical and surgical specialties.

In fact, because of the close relations between the dental system and the body, we often notice dental disturbances giving place to general diseases and vice versa. Hence the necessity for the dentist to know and practice methods belonging to the general physician. In conformity with this, it is natural that the dentist ought to complete his medical and surgical education with the M.D. degree, and that the logical and exact denomination of dentistry ought to be stomatology.

Notwithstanding, the Italian law maintains the old name of dentistry to prevent public opinion confusing the profession of the stomatologists (M.D. graduates) and that of the odontologists (not medical graduates).

The Italian school firmly holds that in the professional life extended to the practice of every branch of the stomatological science (conservative dentistry, dental surgery, dentofacial orthopedia, prosthesis, etc.), must precede the complete medical curriculum.

This is the socalled stomatological conception of the Italian law to which are approaching other nations where the autonomist system still prevails. There are signs of it in the gradual raising of the level of the propedeutic studies in the extrauniversity schools, whose programs follow a real medical line. Everywhere the medical degree is not required, there one feels the necessity of raising the scientific curriculum of the dental studies, and in some cases one can notice the tendency to combine dentistry with medicine which could be rapidly done if there were not existing old traditions and strong interests.

The Italian school, which is today the exponent of the stomatological idea, follows with high interest and complaisance this evolution, slow but certain, and notices, in the New World, too, the signs of the ascent of dentistry through the larger horizons of stomatology: the American Stomatological Association in the United States of America and the Postgraduate Medical School of Stomatology (soon to be initiated under its auspices), are a noble, great and powerful public evidence.

And because the stomatological progress directly regards the theoretical and practical solution of problems among the most important of the social hygiene and prophylaxis, the work begun by the United States of America goes beyond the limits of the school and is beneficial to mankind.

*Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

Diseases of the Mouth—the Domain of Stomatology

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Food, infection, cancer.—There are three very interesting chapters which have largely to do with the oral cavity. One, its relation to food, the other, its relation as a source of infection, the third, as the original site of a cancer which, if unrecognized and left alone, leads to death.

In all three there is a greater opportunity for the prevention of the disease or its earliest recognition which will lead to a cure, than in any other region of the body, except the skin.

Diseases of oral cavity.—These include diseases of the lining of the mouth (mucous membrane) and of the teeth which embraces not only the part which we see covered with beautiful enamel, but the part that we do not see—the roots buried in their bone sockets. In the oral cavity is the tongue and above the oral cavity the socalled sinuses of the head which are lined with mucous membrane like the mouth and communicate with the two nasal cavities—the latter being separated from the mouth by the hard and soft palate. Behind this strictly oral cavity, somewhat like a short passageway between the oral cavity and the pharynx, are the fauces, between the anterior and posterior pillars of which lies the troublesome tonsil. The pharynx is usually known as the throat, and everyone speaks of a sore throat, although, as a matter of fact, the cause of the soreness is either the tonsil in the fauces or the adenoid where the nasal cavity communicates with the pharynx or in the sinuses which communicate with the nasal cavity. When we breathe through the nose or mouth the air passes to the pharynx and down past the vocal cords through the larynx, trachea, bronchi, into the air spaces of the lung. But when we swallow food the muscles lift the larynx against a shutter behind the tongue called the epiglottis, and the food slides over this into the esophagus—a buried tube passing through the chest behind the heart into the stomach.

A little knowledge of this part of the body will be helpful to all in getting some understanding how to protect one's self from diseases that originate in the oral cavity or sinuses.

Infection.—Years ago, in this country, when it was not overpopulated, one could drink water almost anywhere without getting typhoid fever. Within my own lifetime all the waters of this country have become polluted. Both the medical profession and the people were slow in realizing this danger, and it was years before they were protected by a proper water supply with its filtration and chemical disinfection, and later further protected, if they cared to, by a typhoid inoculation, one of the triumphs of the modern medical research laboratory.

Now that we have fairly well controlled the water supply and pasteurized the best milk obtainable and have protected the food from the worst contaminations, diseases due to bacteria carried by food, milk and water into our bodies through the mouth, have been largely eliminated. Having conquered one source of danger, we have been given a breathing spell to observe and learn how to attack other sources of danger. First, there are the respiratory diseases due to air infection, among which colds and influenza rank first. Then there are the infected tonsils and adenoids of children, the root abscesses of adults and the sinuses of all from infancy to old age.

The greatest danger of infection in the bone socket about the root of a tooth, buried in the tonsil or adenoid or dammed in one of the sinuses communicating with the nasal cavity, is that the focus of infection there (an abscess—collection of pus) is the source of bacteria getting into the circulation and producing a poison which ultimately causes such diseases known as rheumatism, joint troubles of all kinds, even to complete crippling (arthritis deformans), chronic diseases of the heart, arteries, kidneys, and, in fact, any organ or tissue of the body. We may call them diseases due to infection having their origin in the mouth or sinuses.

Chronic irritation.—Just as the air may carry into the body bacteria as we have long known that water, milk and food could, we are beginning to learn that chronic irritation on the skin and mucous membrane may produce a lesion which will ultimately lead to cancer. The habit of using tobacco for chewing, for snuffing and smoking has been established since the discovery of America, and this irritation of tobacco combined with ragged, dirty teeth, is the chief cause of cancer of the mouth.

Vitamines.—During the war food was selected for our soldiers chiefly on the basis of its caloric value. The importance of vitamines in the food was known before this horrible event, but it is only since the investigating minds were restored to peaceful investigation that research in regard to vitamines has progressed.

There is a disease called rickets which is entirely due to food which may be of sufficient caloric value, but insufficient in the proper vitamines. The perfection, therefore, of one's teeth begins with the proper food of one's mother and of the mother's milk and of the infant feeding that substitutes for, or follows, the mother's nursing. That infant feeding is the chief method of insuring good teeth has only been recently recognized by the medical and dental professions and has yet by no means reached the public. Without much doubt most of the cavities in teeth observed in children and younger individuals, observed before the gums begin to recede, are due to faulty feeding, the absence of vitamines.

Let us describe a concrete case in which proper vitamines control the healing processes in bone. Here is a young man who breaks the bone of his arm. The fracture is properly set and fixed, but the fracture does not heal. Then it is operated upon and a piece of bone is transplanted, and still it does not heal.

*Read before the Stomatological Joint Meeting of the First District Dental Society and the Vanderburgh County Medical Society, Evansville, Indiana, December 4, 1925. Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

The boy is apparently healthy. Then he is given for the first time food rich in the salts and in the vitamines necessary for bone healing. The foods that young children need and which are less necessary for the older people—calf's liver containing phosphorus and calcium lactate, substances necessary for forming bone; codliver oil, the juice of oranges and other fruits, green vegetables, milk and cream, because their essential vitamines are forced into the diet. Beefsteak and fried potatoes would not do, nor tea and toast. The ununited fracture healed in six weeks.

We are therefore confronted with a new point of view. There is such a great variety of foods and so many of them are so prepared and preserved that although they abound in energy atoms, they are deficient in the essential vitamines. These vitamines are as necessary for health as certain specific serums and drugs are to protect from disease or to cure it.

Next to the proper diet comes the care of the mouth, and in this there is, first, cleanliness and preservation of the teeth. This is a simple matter in young people whose mucous membrane is uninjured by tobacco and whose enamel is smooth. But as cavities develop in the teeth and as the gums recede and as pyorrhea (sometimes accompanied by pus along the gums) is introduced, and as the mucous membrane of the mouth is burned and irritated by tobacco in all forms, then the door is open for all kinds of infections due to known and unknown bacteria and to viruses that can pass through a filter. The irritants, ragged teeth and tobacco, lead to the local areas of chronic irritation in which at any moment cancer may begin.

Stomatology has a broader conception and vision than dentistry. Here is where the art and science of medicine and dentistry come together. The men and women trained in medicine and dentistry need training in this newer knowledge and need this broader conception and vision. The dentist must know more than the mechanics of his science and art. Extraction, cavity filling and bridge work are their great accomplishments, and this, with local and regional anesthesia, makes the surgical part of dentistry painless and a great art and accomplishment. But there is much more in dentistry than this. We must learn how to prevent pyorrhea and preserve the teeth by proper diet. The extraction of a tooth because it has become devitalized or destroyed by a cavity, or because of a root abscess, is a procedure of necessity and not of choice. We must look for the cause of dental root abscesses, pyorrhea, receding gums, and caries of the adult teeth. We have learned the relation of proper food to the preservation of the infant teeth, but we know very little about the preservation of the teeth of, or the cause of pyorrhea in, adults beyond keeping the teeth clean and filling the cavities as they appear.

The relation of the excessive use of tobacco to pyorrhea, receding gums and root abscess is suggestive, and there is an opportunity for an investigation here. In my opinion it is far more essential for smokers, chewers and snuffers to take better care of their teeth than for those who do not employ tobacco in any form. It is also my experience that when the adult user of tobacco begins to have pyorrhea, receding gums and dental root abscesses, it would be wiser and cheaper to stop tobacco.

There is evidently some relation of food to the preservation of the gums. The good circulation of the gums is maintained by chewing of the coarser foods, and if there is an absence of this kind of food the vitality of the gum is impaired.

CANCER

I have mentioned the relation of cancer to tobacco and ragged, dirty teeth. Some years ago in Salt Lake City I was given an opportunity to study the records of the Mormons and, although there was plenty of evidence of cancer of the breast, uterus and stomach, there was little of the lip, tongue and mouth. Apparently it is accepted as a fact that the earlier Mormons did not use tobacco.

The older and more recent literature is constantly calling attention to the fact that cancer in the primitive and barbaric races is almost an unknown disease. Yet, in the same pages we read of the common occurrence of cancer of the mouth in those primitive races who irritate the mouth by chewing betel nuts, or burn the skin over the abdomen with hot coal in winter weather. Apparently no race gets cancer of the mouth unless there is some form of irritation beyond that of the teeth. My accumulated evidence of thirty-five years, since 1890, clearly proves that cancer of the mouth with the rarest exception is only observed in men and women who use tobacco in some form and have ragged, dirty teeth. Nevertheless members of the profession and the people are constantly retorting that they know of a case of cancer of the mouth in which the teeth were good and the patient did not use tobacco. Mark Twain would answer that the exception proves the rule. My answer is that some men and women are liars.

For example, quite recently a woman had leucoplakia on the lower lip and beginning cancer. For three days she refused to admit that she used snuff or tobacco in any form. In desperation, on the third day, I said, "Madam, if your trouble is due to snuff, I can cure it; if not, I cannot." She admitted that she had used snuff for many years, and the statement was corroborated by her husband. Another patient wrote me just before she died of cancer of the mouth that she had smoked secretly for years before the cancer developed. In two cases of leucoplakia in women now under observation, in which both denied the use of tobacco in any form, one, after one year's observation, has just confessed to the use of snuff.

I now have many cases of leucoplakia in men and women which has disappeared completely after tobacco has been discontinued. In quite a number of them the leucoplakia has reappeared when the patient returned to the tobacco habit.

There is every reason to believe that many, perhaps the majority, of those who enjoy tobacco can continue to do so if they receive correct information in regard to the care of the teeth and the mouth. But when any adult who uses tobacco or snuff observes a white patch (leucoplakia) or any area of irritation in the mouth or on the tongue or lip, tobacco should be discontinued immediately until everything returns to normal, and as I have stated before, anyone who uses tobacco and observes pyorrhea, receding gums or dental root abscess, should also give up tobacco, at least temporarily. It is good protection for everyone to have clean, smooth teeth, and it is much more essential for tobacco users.

Neither the dental nor the medical profession, nor the people at large, have realized this any more than they did in the beginning the pollution of our drinking water or the filth in the milk.

THE X RAY AS A SEARCHLIGHT

When people have a toothache they usually respond at once and seek relief, and now as a rule the doctor takes an x ray. But when there is no toothache, but only a little swelling of the gum near the tooth, or of the jaw around the roots, the average patient waits until it gets bigger or painful. If an x ray is taken now it will reveal a little light area in the bone around the root or in the bone beyond it, and this little area may be anything from a root abscess to a cancer. But if the x ray is taken now and the treatment follows at once, the cancer is easily curable. Cancer and other forms of tumors which begin in the jaws around the teeth always give first a little swelling. When people are taught to take an x ray then, and the doctors learn how to treat properly the local area, no one need fear cancer or any of these tumors of the jaw. In these cases delay means increasing danger of death from cancer and increasing mutilation in all diseases because more of the jaw must be removed.

DENTAL ROOT ABSCESS AND RHEUMATISM

Many people, both within and without the professions of medicine and dentistry, do not realize that there may be one or more dental root abscesses without any sensation in the tooth itself. When any adult has a pain in a joint, or rheumatism, or suffers from indigestion, or high blood pressure, or of some trouble with the heart, x ray films of the teeth are more important than counting the pulse, looking at the tongue, or taking the temperature. There is neither time nor space to discuss in this article in greater detail the domain of stomatology.

CONCLUSIONS

The preservation of our health, the prevention of disease, the early recognition of diseases which will lead to their cure, depend upon an enlightened public. All people need correct information. At the present time we have great national educational efforts, but very little efforts in the community. Then the dental and medical professions need further education which will allow them to learn the secret of getting correct information to the people, allow them to recognize diseases in the early curable stages when treatment is simple and effectual and diagnosis is difficult. Then there is a third educational effort—the training of research workers, because there are many diseases the cause of which is still a mystery and for which as yet we have no preventive or curative treatment. If each community would try to do as much for itself as the public press is doing in bringing you correct information, progress would be more rapid.

The Radical Surgical Treatment of the Socalled Pyorrhea Alveolaris and Other Diseases of the Mouth*

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The question as to which treatment of mouth diseases would be best is now much more a matter of dispute than it ever has been before. It becomes evident from the most recent literature that surgical treatment has been generally recommended.

Surgical treatment embraces the following methods: 1, caustic treatment; 2, gingivectomy; 3, radical surgical treatment.

Those who advocate the first method are Roemer and Hille; the second: Seidel, Gottlieb, Ziesel, Nodine, Mueller (Würzburg), Mueller (Bern); and the third, at least with certain species of mouth disease: Robiczek, Bodo, Bonis, Loos, Kranz, Struck, Weski, Widman, Zentler, Roemer, Kantorowicz, Keller (Switzerland), Broberg (Sweden), Prinz (Philadelphia), Partsch (occasionally of my supplementary lessons in Breslau, Partsch, 1924), Loeffler, Dobrin, Fränkel.

The radical surgical treatment, as formulated by myself, allows for immediate and the distinct survey over the whole field of operation (Fig. 1). Furthermore, careful preparation of the flap of periosteum pituitous tunicle is necessary for the exact covering of the bone after the removal of calculus, inasmuch as it lies hidden underneath. Besides, it allows the preparation of the bone itself. It facilitates correct fitting of the pituitous tunicle on the bone, thus securing primary healing without danger of infection. The more I have treated mouth diseases with the radical surgical method, the more I have to emphasize, that radical surgical treatment with most mouth diseases is the sole way to success.

In my book (1) I have tried to draw up indicative details of therapeutics of the individual species of mouth diseases, hoping that this will stir up further interest. It comes forth from these indicative details, that I also recognize therapeutic measures, other than the radical surgical treatment with certain species of mouth diseases; for instance, with a supraalveolar pocket, horizontalis supraalveolaris, i. e., which I am recognizing as being useful!

SUCCESSFUL OPERATIVE METHOD

I present the following claims to a successful operative method:

1. Immediate distinct survey over the entire field of operation. Fig. 1.
2. Complete removal of concretions on the roots.
3. Complete removal of granulation tissue interwoven by epithelial ropes and hidden in the niches and inlets of the bone.

*Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

4. Complete removal of all pathological bone structure (transformation of vertical atrophy into a horizontal one).
5. Removal of inlets and niches of bones going underneath one another (pyorrhea intraalveolaris and cavernosa).
6. Removal of gum pockets by carrying off pituitous tunicle up to the healthy bone structure.
7. Transformation of vertical atrophy into horizontal atrophy. It is well known that healing is much more favorable in horizontal atrophy. (Weski.)
8. Covering of healthy bone with healthy pituitous tunicle in order to obtain the ideal condition of total atrophy.

The *British Dental Journal* (2), in a report of my book, made the following statement: "What most readers like to know is not, whether operative measures have immediately been successful—one may easily suppose it, for otherwise operation would have been given up—but the final success three, four, five or several years later." As I shall show later on, I have proved the procedure to have been lastingly successful three, four, five years after the operation by giving evidence to many a fellow surgeon of foreign countries as well as of my own.

The only condition for lasting success or better success on long sight and therefore for statistics of useful cases is to consider only those cases as satistical material concerning which all requirements I have pointed out as being indispensable for lasting success have been entirely fulfilled. The fact that after radical surgical treatment relapses have been traced does not refute, that under observation of the following conditions this operative method will be a useful one, if the following requirements have been met:

a. The right indication has been stated.
b. The right operative technic is used.
c. One succeeded in entirely removing all concretions, particularly at the molars at the bifurcation of the roots, in spite of putting up the folds.
d. Cases remained under careful observation.
e. Careful hygiene of mouth prevents the coming forth of new exogenous exciting causes.
f. First of all each endogenous and exogenous contributory cause is removed in due time.

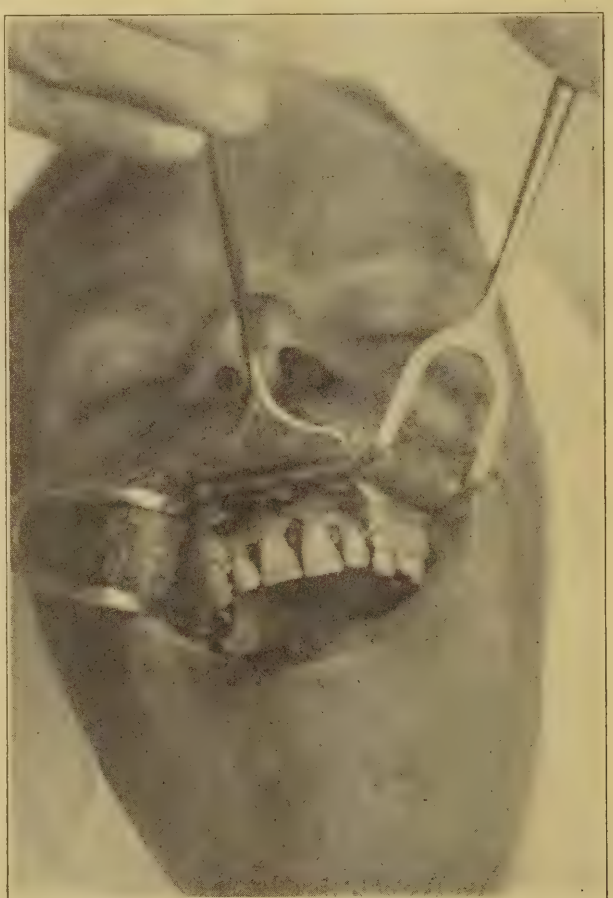

FIG. 1.—Showing the first step in a successful operation, namely, immediate distinct survey over the entire field of operation.

Operations executed by the most expert and skilful surgical operator may apear to be in a deplorable condition, if the respective patient, as it most recently happened in my own practice, is not examined for some years. And if again, in consequence of the same causes, for instance of calculus accumulation; the same disease has developed, which before the operation was the real cause of the sickness.

The cosmetic aspect, for instance, has been cited as a counter indication for this operative method. Sachs, for cosmetic reasons, does not remove the papilla. However, all authors require the removal of gum pockets. Kantorowicz states in his book which has just been published (3): "Modern paradentitial therapeutics culminate in the surgical removal of the pocket. Surgical therapeutics is divided, according to whether it is a question of gum or bone pockets, into two methods, the removal of gum and the putting up of the gum folds with removal of bone.

Roemer, too, (4) calls for removal of the pockets either by radical surgical treatment or by the destruction of deepened gum pockets by means of thermocaustic, used by him over a period of twenty-six years. He then continues:

"The operation according to Neumann is at all events justified and has its advantages in all those cases where it is a question of the following affections, a, deepened intraalveolar pocket (Weski), b, deepened intraalveolar pocket, and undermining caverns (Weski)."

Gottlieb, too, requires removal of the pockets in saying: "Nobody will ever have seen pyorrhea alveolaris (properly spoken in the real sense of the word) without pocket. It is selfevident that we have to draw the conclusion from this distinct characteristic."

Therefore, if there are cysts, tumors in the gum, the pituitous tunicle forming the boils, then the pockets are to be removed. The respective parts of gum are opened by means of hooked chisels, forcibly separated from one another in interproximate spaces, likewise shoved off and removed by curved scissors, knife or cautery. Regarding operation on front teeth, one at first may *try* for cosmetic purposes the scratching out of abscesses in the gums (hook towards the gums). In the event of this also being useless—Gottlieb continues—any further re-

gard to the beauty represents an inconsideration towards the patient himself!

REMOVAL OF BONE

Gottlieb considers the removal of the bone, that is to say the removal of all the bone pathology or

FIG. 2.—A case of cystic abscess of upper jaw, which was opened lingually and palatinally.

rather bone pockets or sockets, just in the same degree as myself and all other above mentioned authors. On the other hand, I advocate it on the basis of clinical experience, Gottlieb takes it as damaging the patient and denotes "any far reaching surgical encroachment" as being needless, and the removal of bone as a polynomial mistake of art. Apart from other points, he refers to the fact that in America one pretends having traced regeneration of the periosteum.

A report published in 1924 about the work of Professor Hermann Prinz, D.D.S., (Philadelphia) shows, that in America he is of a different opinion. Among other points, one reads as follows: "The treatment, first of all, has to consist of regulating the chewing pressure and of removal of calculus. Medication is only symptomatic, lacteal acid treatment is wrong. The solely successful method appears to be the radical surgical methods, such as have operated on cases in all stages. Patients whom Nodine, Ziesel, Zentler, Black and Widman (1911)," which means that here, too, the removal of bones is required.

Gottlieb has not yet anywhere proved röntgenologically or clinically that the principles up to the date outlined here are all recognized hypotheses. However, I can prove that my clinical observations are absolutely right, and I have done so by means of the abundant controllable material at my disposal, which I have submitted to many well-known fellow-surgeons both abroad and in my own country. I have operated on cases in all stages. Patients whom I have operated upon one, two, three, four and five years ago (with whom sometimes I have performed up to six operations in the mouth) were introduced by me to the students of a course in March, 1924, in the Deutsche Zahnaerzte-Haus and also to the members of the American Stomatological Educational Committee in July, 1925, during their stay in Berlin.

I present herewith photographs of two patients operated upon by me. The patient shown in Fig. 2 had a serious cystic abscess on the upper jaw, upon which I operated in February, 1921. It was opened lingually and palatinally. This patient has remained up to the present without any relapse. The photograph was taken in October, 1925. Constitutional attacks of illness could not be traced. Fig. 3 shows a patient I operated on in the Academic Supplementary Institute of the Reichsverband in 1924. I operated on the lower jaw before the American Stomatological Educational Committee in July, 1925. This photograph was taken in October, 1925. All illustrations are taken from my atlas, *Die Radikal Chirurgische Behandlung der Paradentose,* which will presently be published.

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FIG. 3.—Showing operation on lower jaw.

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The Present Educational Status of Stomatology in Italy*

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Stomatology in Italy today is a fully recognized specialty of medicine. It was due to the combined efforts of the Italian medical profession and the Italian Stomatological Federation that Italy is proud to be one among the nations in Europe where the care of the mouth and teeth is considered and officially recognized to be equal in importance to the care of the eye, ear, nose, throat or any other part of the human body. Not only has Italy recognized stomatology to be educationally on an equal plane with other medical specialties, but stomatology has received full recognition of its importance and has been given a prominent place in the public health program. The Department of Health of the municipality of Rome provides for the care of children's mouths as it does for the prevention of tuberculosis.

The American physician and dentist has not had an opportunity to know the struggle which the Italian stomatologists have had to undergo to obtain a place for dentistry among the medical specialties in Italy. The development of the educational system for dentists in our country has been different from that of America and has proceeeded in a different direction. Prior to 1890 dentistry was practised by men who received minor diplomas, which were granted by various institutions of the States of Italy at the time when Italy was not as yet united in a kingdom. On April 14, 1890, the Boselli decree made the possession of a degree in medicine and surgery compulsory for the practice of dentistry for the first time.

It may be said, however, that Italy has always upheld the stomatological standard of education. Those who were practising prior to the introduction of the 1890 decree were permitted to continue to practise with the provision that they pass a special examination. The Boselli decree did not become law until 1912, with the concurrence in opinion of both branches of the legislature. At this time, Italy did not have good dental schools and those physicians who wished to specialize in stomatology had to go abroad, either to England or to America, to study dentistry. At the present time, we have two up to date stomatological schools in Italy, those of the Royal University of Milan and of the Royal University of Bologna.

Unfortunately, the law of 1890 was not completely and satisfactorily formulated, as it did not provide officially for the requirement of instruction in stomatology for all graduates in medicine. In the last few years, several radical changes have taken place in the educational system for dentists in Italy which you are probably familiar with.

The preliminary education for matriculation in the medical faculty consists of five years in the gymnasium, which corresponds to the high school in America, and three years lyceum, corresponding to college work. The university course in medicine and surgery comprises six years of study in a medical school. After passing the examination, the title of doctor of medicine and surgery is conferred. The title Dr. does not entitle the holder to practise medicine. A State examination must be passed in order to secure a license to practise. A duly graduated and licensed physician may practise medicine and all its specialties, this includes stomatology and restorations (prosthesis), even though he holds no other degrees.

The freedom to practise the medical specialties by M.D. graduates without special training in these specialties allowed physicians to practise dentistry without special training. The 1890 decree made no restrictions limiting the practice of stomatology to M.D. graduates with special training in dentistry. This loose construction of the 1890 decree afforded an opportunity in 1923 to effect a temporary change in the educational standard for the practice of stomatology requiring two years of training in dentistry. In Rome a small, but influential group of autonomists, among whom were some holding the M.D. degree, under the leadership of Professor Angelo Chiavaro, demanded a doctorate in dentistry, independent of medicine and surgery, somewhat after the type of the American D.D.S. "They wanted the medical student after his fourth year to relinquish his studies and join the school of dentistry and dental mechanics which was to be established in Rome, and after a curriculum of two years to pass an examination which would confer on him a doctorate in dentistry and dental prosthesis. These ideas found sympathy from the Minister of Public Instruction in Signor Mussolini's cabinet, who, owing to the full powers conceded by Parliament, secured at the end of 1923 the approval of the Council of Ministers for a decree establishing a national school of dentistry and dental mechanics in Rome; this meant the institution of a degree in these subjects at the end of the prescribed course of study and the passing of a special examination."

The 1923 decree aroused violent opposition, as medical men had pronounced in favor of a compulsory degree in medicine and surgery for dentists. Professor A. Murri, one of the leading Italian clinicians, said on that occasion: "It is logical and useful that dentistry finally enters to be a part of medicine, as all other studies of the human body."

The 1923 decree also did not restrict the M.D. graduates from the practice of stomatology without special training. In this respect the 1923 law did not improve the status of the practice of dentistry any more than the 1890 law. The only improvement that took place with the introduction of the 1923 law was that it required a two years' course in dentistry as compared with a one year course in dentistry prior to that date for those who specialized in stomatology. On the other hand, the 1923 law shortened the course in medicine from six years to four years and abrogated the M.D. degree. The

*Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

sentiment of our American confreres on that occasion is best told by their communications received by us on that occasion: Dr. Edward H. Angle says: "I heartily agree with you that it would be a mistake to abolish the degree of M.D. as a requirement for the practice of dentistry in your country. For your country now to abolish the degree would, I am sure, be a step backward which would have to be regained through more trouble later on." And Dr. Eugene S. Talbot: "I am surprised that such intelligent medical men should decide on such a retrograde step as to return to a purely dental college teaching. . . . Let us hope that Italy will not take a backward step in these progressive and enlightened times." Dr. Frederick B. Noyes: "It would seem to me that it would undoubtedly be a step backward to give up the requirement of the M.D. degree for the practice of dentistry in Italy."

FIG. 1.—Parchment of the Seventeenth Century presented to the American Stomatological Association by the Italian Stomatological Federation, in Rome, June, 1925.

The attempt to abrogate the 1890 law requiring the M.D. degree of all who practice dentistry failed. The Italian stomatologists favored the requirement of two years of specialization in dentistry and have retained that part of the 1923 law demanding this standard, but the Italian stomatologists were opposed to the breaking down of the requirement of the M.D. degree as a preliminary requirement for the study of dentistry. In 1921 attempts were made to break down the 1890 law and in 1922 the Italian stomatologists have finally succeeded in signing an agreement with Professor Chiavaro that he respect and make every effort to have respected the old law, with the only change, that of the two year course of dental studies for those who have obtained their M.D. degree who wish to practice stomatology. On that occasion we received a communication from Dr. Talbot (1) stating the following: "You do not know how pleased I was to get your letter this morning and to learn that our dear friend, Professor Chiavaro, has abandoned his purpose to provoke a law which abolishes the degree of medicine for the practice of dentistry. He is too well educated and too good a man to take a backward step at this time in the progress of our profession."

These trials to establish the autonomy of dentistry aroused the opposition of the medical profession who demanded the enforcement of the 1890 law without reservations. The Mussolini Cabinet rescinded the 1923 dental decree and substituted a new Royal decree of October 16, 1924 (No. 1755), which became law in December 12, 1925, through the action of the Chamber of Deputies. The law affects both the educational requirement for the study of stomatology of the medical student as well as of the stomatologist. "The new decree stiffens the statute of March 31, 1912, since it not only requires all dentists to be previously qualified in medicine and surgery, but enjoins upon all future medical practitioners the undergoing of a practical test in dentistry and mechanics to enable them to practise the art of medicine. It is not that the medical graduates of the universities, to which the new statute allows freedom in regulating their special studies, will all be finished dentists, but they will at least know enough to guide them in investigating each case and adopting proper treatment, especially in rural districts where there is no expert dentist."

With regard to those M.D. graduates, who in the past wanted to specialize in dentistry, but who are not required to follow a compulsory course in dentistry, we find that they are now obliged, in conformity with the law of December 31, 1923 (No. 2909), to take a two year course in the state stomatological schools, one of which is located in Milan and the other in Bologna.

It will be noticed that there are no autonomous schools for the teaching of dentistry in Italy for those who have not obtained the M.D. degree. The stomatological schools graduate about one hundred students annually. The Italian Stomatological Federation represents stomatology in Italy and is composed of medically qualified specialists. Dental mechanics are permitted to practise dentistry in the laboratory, but not on patients. There are mechanical dentists, those who have no M.D. degree, who are permitted to practice on patients; these men, however, obtained their diplomas before it was obligatory to have a diploma in medicine and surgery (1890). Others who were in dental practice for some time were permitted to continue to practise by special legislative enactments as a matter of expediency.

In Italy the future medical practitioner will have a knowledge of the fundamentals of dental science, as he has of ophthalmology and dermatology. For dentists in the future—i. e., medical specialists in dentistry and prosthesis—the general university reform actuated by Gentile efficiently provides in the same way as it does for all other specialists. This measure enjoined that no one can arrogate to himself the title of "specialist" in any branch of medicine without having acquired the relative diploma granted by each university.

CONCLUSION

Italy's triumph in the establishment of a high educational standard for the practice of stomatology as a fully recognized specialty of medicine is in a great measure due, not only to the cooperation of the Italian medical profession but also to our American confrères. We have expressed our appreciation of our indebtedness to the American Stomatological Association by presenting them with a parchment of the seventeenth century, which was publicly presented at the reception of the American Stomatological Educational Committee in Rome in June, 1925. (Fig. 1.)

The medical profession as well as the public has reaped benefits from the high standards of medical education in Italy at the present time. Those who wish to practice any medical specialty must pass a special examination which will be proof of a real knowledge of the specialty they intend to practise; the public will, in this way, receive the services of fully qualified specialists.

Lungo Tevere Mellini, 17.

Hygienic Dentistry—Is Dentistry to Become a Specialty of Medicine?*

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New York

The question is one that must be squarely met and decided on as to its merits. Let us study it from all angles. The principal argument from the medical viewpoint is that dentistry is the only specialty devoted to the treatment of the human body that, as a profession, is independent of medicine.

Is this situation the best for the protection of public health? Is it desirable that the dental profession shall be merged with medicine and become one of its specialties? Harmful politics should first be eliminated from both professions. Too often in the medical profession the patient has been crushed by the hydra of politics. Specialization of too fine a degree has also ruined many a patient as well as physician. Focussing on one part of the body to the exclusion of the whole is always pernicious, and can account for numerous mistakes. The body should therefore be regarded as a whole. Unfortunately the highly trained specialist is frequently unable to generalize and should not feel disgraced at calling in a consultant. This is not an argument, but an axiom.

One of the arguments from the dental viewpoint is that dentistry is not a specialty of medicine, except in that it contributes toward mastication and cosmetic effect. In other words a very large percentage of dentists do not accept the term "medical dentistry." From the mechanical point of view this argument might be accepted. A mechanic of the human body is a necessity, but if developed to the nth degree has limitations, otherwise he may become a dangerous man. This condition has its parallel in nearly all our medical specialties, notably in orthopedic surgery. The relationship between medical dentistry and mechanical dentistry has come to the foreground during the past five years. I refer to mechanical dentistry such as caps, crowns, root canal therapy and the devitalization of teeth; in fact, any kind of dental work which may obscure or wall in infection. One can quote numerous reports on this subject from physicians and dentists, but mostly from the former. Cotton, Price, Upson, Satterlee, Draper and others have demonstrated the results of bad dental work. There is now fortunately no real argument for the necessity of the removal of teeth which show definite abscesses, but the argument still hangs on the devitalized tooth. Education in radiographic interpretation is deficient and should be compulsory as the x ray has been our most valuable aid in the detection of infection. Alveolar necrosis is not generally recognized but can be detected by the x ray. This condition is responsible for a large amount of constitutional inferiority in the experience of many of the medical profession. The study of radiographic evidence need not be confined to the specialist but should be included in the dental and medical curricula as part of the education of both the dentist and the physician.

This leads to another reason why dentistry should

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be a specialty of medicine. Close association would lead to cooperation. If the dentist understood the physician's viewpoint there would be no need of argument except as to minor details. These details need not concern us any more than the individual methods of the rhinologist, otologist, dermatologist or other specialists concern the family physician or internist. The general principles of surgical care of infection should belong to all branches of medicine, including dentistry. Public opinion usually decides a question and would soon condemn a surgeon who did not open an abscess, or continually sealed in an infected area. We should not wait for public opinion, but anticipate it. In this day of intellectual awakening we should obey the laws of Pasteur which once were despised and are now universally followed.

Why should there be friction and lack of cooperation between dentists and physicians? The reason is explained by the fact that dentists become so highly specialized that they fail to see the disastrous results of sealed infection in practice based on mechanistic theory. If dentists had had the same medical education as medical specialists the fault might be corrected. The dentist fears that the years of education would be prolonged. This is more of a phobia than a real drawback for our educational system has undergone a change for the better during the last quarter of a century! Why should dentistry not share in the advance which has proved to be of such value to both doctor and patient? The dentists argue that their profession has advanced equally and can progress by itself. An answer to this, medicine stands ready to offer to dentistry all that science has bequeathed to her. This will surely give a broadening spirit to the dental profession and an opportunity to study and discuss the local dental problem with special reference to the public health.

Many a dentist would like the moral support of a physician when the patient insists on saving a condemned tooth. The fault here lies with the patient. The answer is education of the patient, the dentist and the physician. In order to accomplish this education of dentists and physicians should be uniform to the separating point of the specialties. While dental schools have attempted to raise the standard of dental education they have overlooked two important elements in their proposed reforms, namely, 1. The need of training in a basic medical course. 2. That specialization should follow the basic course. The dental plans now proposed are altogether beyond the point of practicability. For example, one dental college proposes seven years for the dental degree. Other dental educators advocate a six years combined medicodental course, after which it is proposed to confer a doctor's degree in dental medicine. There is an indication that in the near future dental educators will realize the value of placing dental training on the same plane with other medical specialties.

For the benefit of our people we must educate our next generation of dentists to diagnose and prevent mouth infection. Medical dentistry or stomatology as distinct from mechanical dentistry, is established in Europe on a medical basis. This basis is now advocated by the American Stomatological Association. Oral surgery is recognized as belonging to general surgery and for its efficient practice the M.D. degree is advocated. In the treatment of the nonsurgical diseases of the mouth, dentists and physicians admit that a medical training is of great benefit to the practicing dentist. When we refer to mechanical dentistry the question arises, is it necessary that the dentist be medically trained? The answer is affirmative. In order that the dentist may render dental service devoid of root sepsis and general mouth sepsis it is necessary to be familiar with focal infection. A bridge constructed on infected teeth, even if they do not give immediate and apparent symptoms of infection, should be condemned. The dental mechanic who makes the bridges on the models need not have the same training as the stomatologist for he does not deal with the vital tissues.

In conclusion, the following case histories are cited to illustrate the disastrous results of the errors of lack of medical training in the dentist:

Case I.—No. 3746. Male, aged fifty years. Chief complaint, loss of weight and malaise. Patient had always been healthy, had had excellent dental work done which had been properly followed up by radiographic studies. For the past six months he had been depressed, physically tired, slept poorly, ground his teeth and groaned during sleep. He was pale and anemic and had lost ten pounds. Physical examination showed nothing abnormal except a mild grade of anemia. Dental examination showed minute areas of retained root fragments and some necrosis in the area of a former molar extraction. There was also evidence of beginning apical infection. On consultation with his dentist curetting of the molar region in question was done and the result was immediate restoration to health with regain of ten pounds. The patient had had previous medical advice to take a year's vacation. Following the operation the vacation was unnecessary and his health has been excellent for the past five years. This is one of the examples where dental infection alone could be held responsible for the physical disturbances in a patient.

Case II.—No. 3767. Male, aged thirty-one. Never robust and subject to *petit mal* seizures for several years. Tonsils and adenoids removed at thirteen. In 1910 had bronchopneumonia, followed by constipation. Three severe migraine attacks every year for fifteen years, this was especially marked in 1910 which was his bad year. Abdominal distress, indigestion with marked hyperacidity and urticaria. Weak eyes. His chief complaint was corneal ulcers since 1913. These ulcers had been recurrent, becoming more and more frequent, necessitating constant local treatment. Wassermann negative. Examination in 1920 showed patient decidedly subnormal with enteroptosis and splashing in abdomen. Typical gastrointestinal invalid. Corneal ulcers with superficial keratitis. Blood chemistry and gastric analysis normal. Fetid, constipated stools high bacterial content. Cultures gave Streptococcus fecalis and Bacillus coli from which a vaccine was made. At this time dental examination was not thorough and there was no knowledge of badly infected teeth. Treatment along the lines of diet and vaccines for immunity was moderately successful for two years. Examination of teeth in April, 1922, showed twelve badly infected teeth with osteomyelitis of superior maxilla on both sides and chronic left maxillary sinusitis. After six months' delay infected teeth on one side were removed and the bones and antrum scraped. The bone

necrosis was extensive. The patient had been in good condition until recently when he had a slight return of the corneal ulcer. During May, 1923, the patient was advised to have the remaining areas of infection cleaned up. The epileptic seizures have been arrested and the patient has gained twenty pounds.

During October, 1923, the remaining areas of infection were removed, gradual improvement in health resulted until at the present time (January, 1926) the cornea was clear, the bowels regular, the strength excellent with no more epileptic seizures. The course of this case demonstrates that the physical condition would not have cleared up without the removal of dental infection and bone necrosis.

The Food Education Society of England*

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The Food Education Society was founded as far back as 1908 under the title of National Food Reform Association, assuming its present name upon incorporation in 1919. Its objects are thus set out in the memorandum of association dated May 9th of the latter year:

1. To promote the physical, intellectual and moral welfare of the people of the United Kingdom, its dominions, colonies and dependencies, especially in relation to diet and hygiene.

2. To promote economy, both public and private, especially in relation to diet and hygiene.

3. To take any steps calculated to promote the stated objects of the association, and in particular to do all or any of the following things for the purpose of attaining these objects, viz.:

a. To initiate and carry out inquiries concerning matters of diet and hygiene and public and private economy and to issue reports or other publications.

b. To collect, consider and disseminate information bearing on the stated objects.

c. To print, publish, issue and circulate a journal or other periodicals, books, leaflets, or other literary matter, or to aid in such printing, publishing, issuing and circulating.

d. To institute lectures and demonstrations and to hold or take part in meetings, exhibitions, conferences and congresses calculated to promote the objects of the association.

e. To found research scholarships, lectureships and like educational enterprises and to train lecturers and demonstrators and others and grant diplomas and certificates and employ individuals for the furtherance of the work of the association at such salaries as the association may resolve upon, provided always that every such diploma or certificate shall contain on its face a statement to the effect that it is not issued under, in pursuance, or by virtue of any statutory or government sanction or authority, but by the authority of the association only.

f. To furnish information to Parliament, Royal Commissions, County Councils, Boards of Guardians, sanitary and other public bodies, municipal and other corporations, educational and other committees, and to private individuals, and to aid in the enforcement of the law affecting or relating to diet and hygiene.

g. To promote and cooperate with others in promoting administrative and legislative reforms in matters relating to or affecting diet and hygiene.

h. To cooperate or to become associated with any other organization, institution, or society whose objects are similar to those of the association which by their constitution prohibit the distribution of their income and assets among their members to an extent at least as great as is imposed on this association by clause four herewith.

i. To establish branches of the association in the United Kingdom or elsewhere and to delegate to them any powers as shall from time to time be considered desirable by the association.

From the outset prominence has been given to the subject of oral hygiene. The usefulness of its propaganda was early recognized by an invitation to contribute an exhibit to the illfated International Dental Congress held in London during the first few days of the great war. At children's welfare exhibitions before the outbreak of hostilities, as at national economy exhibitions throughout the country during the years 1915-18, models of children's teeth were shown and explained and much literature sold. Talks were also given at the last mentioned exhibitions to thousands of school children and to adults. Publications such as *Aids to Fitness,* now in its twenty-third thousand, *Why Worry About Sugar? Eat Victory Bread,* together with a series entitled *Facts for Patriots* (dealing, inter alia, with bread, sugar, sweets, fruit, vegetables, salads, milk, cocoa and chocolate) as well as a steady flow of letters to the press, have all played a part.

The teeth figured conspicuously at the Guildhall School Conferences of 1912 and 1913. *Rearing an Imperial Race,* in which the proceedings of the second conference are included, with much besides, has found favor in America and was reviewed in the *American Journal of Public Health.* Writing of this volume and of its predecessor, *Our Children's Health at Home and at School,* Dr. C. F. Langworthy, Chief United States Nutrition Investigations, said: "I have recently been examining them with much interest."

With the Manchester Conference on the Prevention of Diseases of the Teeth, 1920, the climax of the campaign was reached. *The Gateway to Health,* published a year later and containing a full report of the papers and discussions extending over two and a half days, with a large amount of additional matter, has found equal favor among leaders of the medical and dental professions. It is likewise being

*Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

studied by social workers and the general public. Many orders have been received from the United States. It is particularly gratifying to learn that it is regarded by the editor of the *Review of Clinical Stomatology* as "a valuable contribution to the literature on public stomatology." The society sent a representative, in the person of its vice-chairman, Sir Harry Baldwin, to the conference convened on January 16, 1925, by the Dental Board of the United Kingdom. The chairman of the board (The Rt. Hon. F. D. Acland, P.C.) suggested that those present "would be glad to hear more of the Manchester Conference." The honorary secretary was subsequently invited to serve on the advisory committee appointed by the Dental Health Propaganda Committee and received the thanks of the board for his services upon this and two sub committees.

Further details of the educational work done by the society are to be found in a paper read to the School Dentist Society in December, 1919, and again at the Manchester conference.

For some years past the society has had a stall at the exhibitions in connection with the annual meetings of the British Medical and British Dental Associations, as at the London Medical Exhibition, Nursing Exhibition, London and provincial, and at the Conference of Educational Associations. At the latter papers have been contributed on such subjects as Diet as an Essential Factor in Education, School Children's Diet by Dr. Harry Campbell, and The Diet of Educationists. A large and growing amount of propaganda is accomplished on these occasions.

In her cookery demonstrations The Pudding Lady (Miss Florence Petty, H.M.C.A.) gives much prominence to oral hygiene and talks on The Care of the Teeth have been given by her, as by other members of the staff.

The vice-presidents include Professor Irving Fisher, Yale; the late Horace Fletcher; Sir F. Truby King, New Zealand, as well as Dr. Harry Campbell, Dr. Sim Wallace, and Mr. Montagu Hopson. Dr. Harry Campbell is the society's chairman, while Dr. Sim Wallace is also on the executive committee. The British Medical and Dental Association and the School Dentist Society have been represented on its conference committees.

Perhaps the chief merit of the work is that its propaganda is scientific and at the same time popular.

Any further information, as well as a list of publications, will gladly be sent on application to the office, 24 Tufton Street, Westminster, London, S.W.I., Charles E. Hecht, honorary secretary.

The Problem of Dental Education in France*

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THE DENTAL QUESTION

The dental question is one of the simplest; its clearness follows naturally upon the statement of its history. It is thus at least in France, but what we have to say of it must evidently apply with little difference to many other countries.

Before the Revolution in 1789, the citation of the name of de Fouchard is sufficient to show that this specialty was honorably followed. But the Revolution suppressed diplomas and faculties, and after the reorganization of higher courses by the law of Ventose (sixth month of the revolutionary calendar), dental science, forgotten, was not even mentioned.

On account of this its practice was open to all. Also, while the other specialties continued their progressive evolution toward medical science, dentistry remained stationary, tended to depart from the path followed by the others, and was not slow to suffer degeneration.

With no more diplomas, no more schools, no more instruction, dental science became a trade; to prepare oneself to practise it, it was no longer necessary to pursue courses, but to undergo an apprenticeship. It was no longer a question of a scientific profession. What was taught consisted of methods, tricks, prescriptions. One emerged from a training like that of the sorcerer, the professional healer, the bonesetter. This lasted almost a century.

About 1880 certain of these charlatans took a notion to make themselves known, perhaps to render service, by codifying these procedures and founding a school. But they were themselves the products of these methods, had been stamped with their mark, and could not free themselves from their environment, from their predecessors, and from a century of obscurantism. Their training was manual; their practice was the same; they could not lead their pupils except along the paths they had followed and continued to follow. And so they decreed that technic was everything in dentistry: as to science, there could be no question, on the face of it, as to that. It was thus that a precedent began to be established; moreover, most unfortunately, obscurantism was being systematized.

These organizers dreamed of nothing but defending their work, of strengthening their assumed position. They proceeded then to install themselves in an isolation from which resulted inevitably the doctrine of autonomy.

The public accepted voluntarily this attitude. It was not with impunity that, for almost a century, it fell into the habit of considering the dentist as a mysterious being, a sort of magician or prestidigitator. Also when, from a desire to keep themselves independent on the borderline of medicine, the surgeon dentists proclaimed the absolute necessity of a marvelous technic, the way was prepared, and the thesis was admitted without difficulty, in all the professions, and even in the medical profession.

Equivocation resulted, carefully fostered by the

*Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

leaders of the dental groups, for whom it had secured positions which they wished to keep. The groups followed afraid of a progress which would risk showing up their insufficiency and the necessity of their suppression.

These consequences were grave. In spite of general culture, in spite of indispensable clinical instruction, the surgeon dentists have remained as a whole the worthy descendants of charlatans. It is a trade that they practise, not a branch of medicine. They accomplish, by means of ritualistic gestures, results of which they cannot understand the import.

They fill cavities without knowing what dental caries is, without the power to envisage the consequences, to the other organs, of such practices; they extract because they do not know the cause of the trouble and the therapeutic possibilities; they retain teeth under conditions of which the clinic and the radiograph daily show us the dangers.

It is a trade; instruments, apparatus, everything must have a useful purpose; the value of the products is in direct ratio to their demand; today it is vaccination which is in favor, or at least what goes by that name; tomorrow the same will be true of the violet rays.

THE REMEDY

To stop this equivocation. Technic is a means but not an end; it is dangerous if the technician is not above all an expert clinician.

Are there organs that are autonomous? How can such an insane opinion be credited? All are interdependent, and so it is necessary to know general pathology well in order to practise one of its branches; it is necessary to be first a clinician in order to diagnose and to cure.

It is indispensable then to raise this specialty to the level of the others, to require that a man be a physician before he can treat patients; the raising of the moral plane will follow, and we shall do away with a trade in order finally to organize a branch of the art of healing.

The Relation of Nutrition to Stomatology*

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New York

Correct nutrition, prenatal and throughout life, should result in an approach to perfect teeth for mankind. To cite some authoritative evidence substantiating this opinion, I shall quote from Cross (1): "Good teeth are possible." "The mother more than the dentist is responsible for poor teeth or can give good teeth to the child because teeth are an organ of the body and are developed by the food just as are other organs." To show how important this is considered by Dr. Cross, who is the director of the Forsyth Dental Infirmary for Children, I shall quote a statement of his from a report of this dental institution for 1925. "This is a medical clinic (speaking of the dental pediatric clinic) with a dental viewpoint inasmuch as its object is to improve the nutrition of the child with the idea of influencing the structure and quality of the teeth. The research work carried on throughout the last few years tends to show very plainly the effect of nutrition upon the development and maintenance of the teeth and, based upon these results, dental pediatric work has been developed."

GOOD TEETH THE NATURAL RIGHT OF MAN

It seems evident that good teeth are normal and the natural right of mankind if, as Dr. Cross says, they are possible and if it can be shown that in certain countries in the past or in certain countries now they are the rule. Then we must accept this as a part of the normal healthy human being. In other words we must consider the deplorable condition of the teeth of the American people as a departure from health and a condition which we should make an effort to correct.

*Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

PREVENTIVE DENTISTRY

In the United States with its one hundred and thirteen million population we have approximately fifty thousand dentists. There is no question of the high degree of skill developed in their art in a technical way. They have invented many ingenious instruments, devised operations and methods of filling cavities which compare favorably with the achievements in any other line of endeavor. What they have done is thoroughly commendable. From the viewpoint, however, of preventive dentistry little has been done. If eighty per cent. of adults suffer from pyorrhea; if more than one hundred million men, women and children suffer from caries and if seventy-five million have tooth abscesses; if the teeth of children begin to decay in the temporary set and continue throughout life, we cannot say that much has been accomplished. We might say that from generation to generation there is some improvement in the methods of filling the teeth but the teeth themselves are no less subject to caries, abscesses and other conditions and are responsible for as much systemic disease. If, as recorded in literature, over forty diseases have been traced to diseased teeth and teeth are just as diseased as they were several generations ago, should we not look for other methods in an endeavor to accomplish more in the treatment of diseases of the mouth and diseases arising therefrom?

FAULTY NUTRITION IN RELATION TO POOR TEETH

The reason for the prevalence of poor teeth in this country has to do in all probability with faulty nutrition. We have given little attention to the subject of scientific nutrition. Indeed we have failed to put into practice those principles brought to our

attention. We know that our dietary is lacking in green and coarse vegetables and in fruits. Scientists inform us that it is very frequently lacking in calcium (lime). This is a significant point when it is realized that the teeth are nine tenths lime. We know that our diet has been comprised of too high a proportion of soft foods, of rich starches and fats, including a mixture of starches and fats in the desserts so commonly permitted. The consumption of sugar in this country has increased from ten pounds per capita per annum a century ago to one hundred pounds. It is said that in forty years the consumption of candy has increased ten times. Our excesses in these lines have a deleterious effect upon the teeth.

It does not seem strange when these facts are taken into consideration that the majority of people have inferior teeth. Given food which requires chewing, food which furnishes sufficient calcium, vitamines, minerals and proteins there should be a great change in our teeth. In our eating it would be difficult to depart much further than we do from a diet suitable to produce healthy teeth. Sherman states that we, as a nation, are much more subject to lime deficiency than to protein deficiency. We also recognize that in refining many articles of food we remove vitamines and minerals. In order to offset this it would be necessary to choose articles in each instance which would contain the things removed in an amount sufficient to make up for the deficiency in the refined foods. This would be a rather difficult correction to make, is not practicable and it has not been done up to the present time.

FURTHER EVIDENCE OF THE IMPORTANCE OF NUTRITION

To give supporting evidence in the matter of the importance of nutrition in the development and maintenance of good teeth I wish to quote again from Cross (2), "These observations with children show first that there are at the present time those whose teeth are normally formed and completely covered with enamel; that strong and well developed jaws with wide arches are in evidence in certain localities. Also that these conditions exist in spite of little or no care in regard to brushing, or other artificial means of cleaning, the only attention given to this feature being the unintentional one of habitually ending the meals with a salad or fruit.

Among the charts shown by Cross, Chart E is of sixty-three Italian children, average age twelve years, who arrived in 1921-1922. Eighty-eight per cent. had good teeth, one per cent. poor. Balance fair. Chart F, twenty-five Italian children, average age twelve and a half years, American born, ninety-six per cent. with tooth defects. Chart G, forty-eight Italian children, average age six and one half years, American born forty-two, two with good teeth; Italian born, six with perfect teeth; eighty per cent. with tooth defects. These observations would tend to show that the Italian born children have a prevalence of almost perfect teeth, while children of the same parents born in America have almost as bad teeth as Americans in general. To accept this statement of Cross is to recognize the great importance of nutrition in relation to stomatology—the latter being the science of diseases of the mouth. To state this relation in a few words we have in the mouth: teeth, gums and bones of the jaw. To diseases of the teeth, gums and jaw we can trace over forty other diseases. Proper nutrition, prenatal and throughout life, seems to create good teeth. It seems to render these tissues healthy and resistant to disease. The relation therefore of nutrition to stomatology is one of fundamental importance. In fact, it probably transcends all other factors.

GOOD TEETH NORMAL

That good teeth are normal I think no one would deny if they had knowledge of the condition of the teeth of the various races past and present. I think they would find too many countries in which excellent teeth predominated. E. A. Hooton (3) examined ninety-six skulls from the Peabody Museum, which were exhumed by Stefansson, these being from inhabitants of Iceland who lived in the ninth to the thirteenth centuries. He reports no decayed teeth. McCollum (4) states that skulls of several hundred Indians of two hundred to three hundred years ago in the National Museum at Washington were examined and all teeth found perfect with the exception of a few which had been broken off." These instances might be multiplied. Now which are we going to regard as normal? The condition in the United States with almost universal caries and pyorrhea, with irregularity of teeth and poor articulation or the condition in the countries where the teeth are regular, articulate well, free from caries and pyorrhea. There can be but one answer. Teeth approaching perfection are normal and the right of mankind. Diseased teeth are like diseased tissues in other parts of the body—a departure from the normal—something to be avoided.

ANIMAL EXPERIMENTATION

Zilva and Wells, experimenting with guineapigs, concluded that the teeth were among the first parts of the body to show the effects of a scurvy producing diet and they might even be markedly changed in mild cases where evidences in other parts of the body were lacking.

May Mellanby has established a similar relation between rickets and defective teeth through animal experimentation.

FAULTY METHODS OF EATING

It is simpler in endeavoring to point out how we should eat in order to produce good teeth to call attention to the faults of our present methods of eating and then show how they are corrected. The diet must contain all the elements of which our tissues are composed in sufficient quantities to build them and later to repair them and furnish fuel for life's activities. At present our chief faults are too little calcium, sometimes too little iron, too little of the vitamines, too little roughage, too much sweets, refined foods, rich foods, concentrated foods and too great a total quantity. The method of correction is as follows:

To correct the lime deficiency the dietary for the day should include two glasses of milk and two helpings of green leaves. To correct any deficiency in iron the green leaves together with a variety of food will suffice. To correct the deficiency in vita-

mines use the green leaves, two helpings of fruit, three helpings of coarse vegetables, the aforementioned milk, three or four balls of butter with two or three ounces of cream and only whole grain products. Now the deficiencies of the dietary have been covered.

We will discuss the excesses: Sugar and candy and sweets could well be eliminated from the dietary. The same is true of cake and starchy desserts.

The fats should not be taken in amounts greater than mentioned, with the exception of a small amount of olive oil and the fat of the yolk of eggs as these are eaten, unless it is desirable for preventing loss of weight for those inclined to thinness or those who are very active.

Excessive intake of protein is easily avoided if one realizes what is a normal amount of protein. An easy method of approach is the following (5):

First we must recognize that many articles of food not classed as protein food contain a moderate amount of protein. Bread is a good illustration of this. Though approximately fifty per cent. carbohydrate it is a food which contains between five and ten per cent. of protein. Figuring an average diet the writer found that in consuming about two thousand five hundred calories we obtain thirty to forty grams of protein in articles classed as carbohydrates and fats. This is almost half of our protein requirements for the day and we obtain the remainder from meat and two glasses of milk. One third of a pound of meat or fish daily is sufficient. If for any reason meat cannot be taken, milk or cheese may be substituted. One quart of milk furnishes approximately the same amount of protein that is furnished by one third pound of meat.

To show the points regarding our lime requirements and our protein requirements two tables are presented, one showing the ten best of the chief sources of lime, the other the ten best of the chief sources of protein.

The accompanying menus for one day illustrate how a proper dietary can be selected which gives the required amounts of calcium, phosphorus, iron, protein, fats, carbohydrates, calories and vitamines. It shows how the principles here enumerated may be applied.

It will be noticed that these menus for a day include a variety of food. They are not so different from our way of eating as might be expected and yet all of the points mentioned are covered. Our deficiencies have been supplied and our excesses have been eliminated. This is only commonsense but it answers all the scientific requirements. It must be recognized that in feeding our bodies we are building our tissues. We supply them exactly what they require. They are therefore properly built and should be normal in every way.

TEN CHIEF SOURCES OF LIME

(Daily requirements 15 grains CaO)

		Grains		*Requirements*
Milk, 10 oz	=	7.3	=	1/2
Cheese, 1 oz	=	5.7	=	1/2.5
Mustard greens, 2 oz	=	6.0	=	1/2.5
Turnip tops, 2 oz	=	4.2	=	1/4
Molasses, 2 oz	=	2.5	=	1/6
Bread, Boston brown, 3 oz	=	2.37	=	1/7
Oranges, 7 oz	=	1.9	=	1/8
String beans, 4 oz	=	1.2	=	1/13
Spinach, 2 oz	=	0.8	=	1/19
Bread, whole wheat, 6 oz	=	0.79	=	1/19

TEN CHIEF SOURCES OF PROTEIN

(Daily requirements 70 grams)

	Grams
Meat, 5 oz	34.5
Milk, 1 quart	33.0
Cheese, cream, 1 oz	8.0
Cheese, American, 1 oz	8.0
Bread, whole wheat, 6 oz	17.0
Eggs, 2	13.0
Baked beans, 2.6 oz	5.4
Peas, 2 tablespoonfuls	5.0
Cereal, moist, 1 helping	3.0
Banana, 3 1/3 oz	1.5

MENUS ILLUSTRATING A PROPER DIETARY

BREAKFAST

	Lime (CaO) *grains*	*Phosphorus* (P_2O_5) *grains*	*Iron grams*	*Protein grams*	*Fats grams*	*Carbohydrates grams*	*Calories*	*Vitamines*
Orange	2.00	6.00	0.006	1.00	....	15.	70	BC
Oatmeal	0.40	0.50	0.016	4.30	1.7	16.7	100	AB
Milk, 2 oz.	1.50	1.90	0.002	1.87	2.37	3.	40	ABC
Cream, 40%, 1 oz.	0.50	1.50	0.001	1.00	12.00	1.	120	A
Bread, 1 slice (whole wheat)	0.13	1.20	0.006	2.30	0.50	13.	70	AB
Butter, 1 ball (1/3 oz.)	0.03	.06	0.0003	....	8.50	....	80	A
Cafe au lait: Coffee, 4 oz. Milk, 4 oz.	3.0	4.0	0.004	3.75	4.75	6.	80	ABC
Total	7.56	15.16	0.0353	14.22	29.82	54.7	560	

LUNCHEON

	Lime (CaO) *grains*	*Phosphorus* (P_2O_5) *grains*	*Iron grams*	*Protein grams*	*Fats grams*	*Carbohydrates grams*	*Calories*	*Vitamines*
Eggs	1.60	5.00	.049	13.00	5.	....	150	AB
Bread, 2 slices (whole wheat)	0.26	2.40	.012	4.60	1.	26.0	140	AB
Butter, 1 ball	0.03	.06	.0003	....	8.50	....	80	A
Carrots, 2 tablespoons	1.00	.50	.007	1.00	0.40	9.3	40	ABC
Lettuce, 4 oz.	1.04	1.80	.012	1.14	0.25	2.8	20	ABC
Milk, 1 glass	6.00	8.00	.008	7.50	9.50	12.0	160	ABC
TOTAL	9.93	17.76	.0883	27.24	24.65	50.1	590	

DINNER

Beef, roast, 2 slices 5x3x¼ inches	0.180	4.500	.0860	23.00	22.00	....	300	B
Potato, baked	0.35	2.5	.0220	2.20	0.125	22.2	100	ABC
Beans, string, 1 cup	1.100	0.283	.0160	2.40	0.30	5.8	40	ABC
Carrots, 2 tablespoons	1.000	0.500	.0070	1.00	0.40	9.3	40	ABC
Salad: Romaine, 2 oz.	0.550	1.180	.0500	....	....	....	10	ABC
Pineapple, 1 slice canned	0.200	0.675	.0035	0.21	....	19.65	80	BC
Banana, ½	0.093	0.700	.0044	0.75	0.25	11.0	50	ABC
Apple, ½	0.120	0.375	.0039	0.25	0.25	8.5	35	ABC
Grapes, white, 12	0.080	5.400	.0009	....	....	....	60	BC
Mayonnaise, 1 tablespoon.	....	.....	....	0.35	11.00	0.5	100	
Pineapple juice, 2 tablespoons								
TOTAL	3.673	16.113	.1937	30.16	34.325	76.95	815	

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30 EAST FORTIETH STREET.

A Discourse—Wherein a Doctor Intrudes on the Domain of Dentistry*

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The time is near when such a title will involve a contradiction of terms, for then it may be said "How can a physician trespass if he merely scrambles over a fence on his own estate? The little isolated settlements of former times no longer exist, they are now merged into an incorporate acreage."

Dentistry of the past and much of it today is in an anomalous position. The puissance of modern medicine demands that dentistry shall broaden and develop from what is largely a mechanical art into a department of medical practice comparable with ophthalmology, dermatology and other 'ologies which after all are only centrifugally concentrated trends of general medicine. A specialist in any line cannot reach the maximum of scientific usefulness if he has not been well grounded in general practice; and similarly an internist may concisely evaluate his qualifications by gauging his degree of working knowledge of the current accomplishments in the several specialties. He must know the rudiments of ophthalmology and have it clear in his mind, that a refraction without a mydriatic is an unscientific makeshift, indulged in by optical quacks who dare not use "drops," and some oculists who will not take the necessary time to employ them. He must know that an acute hemiplegia in a young person is not a "stroke" but may mean unrevealed syphilis. He must know that an ordinary bellyache involves problems which may even elude the highest diagnostic acumen.

We can all learn from each other, and there is not even a remote possibility of any one ever reaching the sublime intellectual heights of knowing it all. Miserable, however, is the pretender who through laziness has learned nothing since he left college; because with him, the widening hiatuses in progressive information become automatically filled with vociferous prejudice and conceit; and his voice is especially loud in the criticism of later innovations in the progress of medicine, the normal understanding of which lies beyond his moss grown comprehension.

According to present day conceptions of disease, its etiology is divided into six general groups, some of which may in a manner merge. Thus we recognize psychical causes; traumatisms; degenerations and involutions; morbid growths; extrinsic chemical poisons (organic or inorganic, but devoid of life); and in the last class, living organisms—animal or vegetable—with their chemicobiological products which according to their nature and activity are more or less destructive to the vital organs of the invaded subject.

The present discussion is limited to the last of these etiological groups; or, more specifically, to pathogenic bacteria localized in some circumscribed nook of the body. This constitutes the medical problem of focal infection; and with growing observation and experience I am constrained to remark that this latest development of medical attainment is now only in the infantile stage of its ultimate importance and comprehension.

The gentlemen of the dental profession are dealing with but one manifestation of the versatile depredations of this highly organized etiological culprit. It falls to the lot of the more broadly observant physician to pursue him into his remoter Briarian lairs. In the established medical routine of inspection, we usually begin with the teeth and then proceed to the tonsils, nose, sinuses, ears, pulmonary tract, gallbladder, appendix (some say the mesenteric glands), intestine, prostate, fallopian tubes, endometrium; and time will doubtless reveal other hidden spots where pathogenic bacteria may colonize, and from thence travel with their destructive sewage in the vital streams to find landing places on remoter shores in the system, there to ravage perhaps unrestrained, like devastating pirates.

One curious and important observation concerning pathogenic bacteria is their demonstrated tendency to transition, evolution, or variation under physically altering conditions. Thus a given colony, if freely accessible to air, may remain respectable citizens of their kind, perhaps attending church services, forming antisaloon leagues, and acting generally with peaceful sobriety; but once let these nomadic settlers get locked in and be gradually deprived of air, and what happens? Do we not see the Christians degenerating into catiffs, the worthies into wretches, the saints into sinners, the deacons into demons, the pious and infallible topes into sure enough topers; and thus the whole bacterial civilization may evert from the comparatively innocuous to the actively wicked.

Another significant consideration is the fact that focal infection is not a fixed quantity, working out identically in all persons. On the contrary, it is a complex vital problem possessed of a moving scale of invasion and vulnerability, measurable in degrees at either end of the situation. Thus it is that in each afflicted person the varying quantum of invading virulency and established systematic resistance is comparable with the vacillating and endless struggles of Ormuzd and Ahriman. The particular strain of bacteria may be strongly or weakly toxic, and correspondingly the established vital resistance to it high or low. This circumstance greatly complicates the problem as it is viewed by the average layman, who naturally prides himself on what he calls his "common sense." These are our patients, the people with whom the professional man must actively deal. With many of them their only educational uplift is the press and the pulpit. And whatever else may be credited to these sources of information, no intelligent person in these days would claim for them any scientific value. On the contrary, I have even heard highly intelligent and thoughtful people express the wish that the churches be converted into lecture halls for the dissemination of useful knowledge, wherein people would hear more about health and less about heaven; more about popular medical problems and

*Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

less about Moses; or as the dentist might express it, more about teeth and less about trinities. In these passing cogitations I am far from any desire to controvert any one whose established views may take our contemporaneous theology seriously. However you may individually feel about these problems, the fact remains that doctors and dentists are educated technicians, living in contact with patients who may yet be mentally submerged in the continuing dark ages of ignorance and superstition, from which these particular humans have not yet been emancipated. The dentist, well knowing these mental limitations of his patients, has a serious problem to deal with in this more technical concept of focal infection. I venture to say that these are problems often thought over in private by doctors and dentists but seldom publicly discussed excepting by the few who have outspoken radical convictions. I have personal acquaintance with several young dentists, well qualified in their profession, but naturally striving to develop a paying practice. A new and perhaps influential patient may come in. Inspecting the denture of his new patient, our dentist may scientifically have in mind all that I could tell him about the sinister menace of infected teeth. Likely at once comes the potent argument of the layman, whose "common sense" of course outweighs what he calls "irresponsible medical enthusiasm." Naturally these people do not want to lose teeth which do not ache, and continue to function for chewing.

The layman's arguments for socalled common sense may be expressed in terms about as follows:

1. I have close acquaintance with people whose teeth are awful. They have had nasty stumps in their mouths for years, yet apparently they are in good health.

2. Friends of mine have what appear to be perfectly sound teeth. They go to their dentist at frequent intervals, yet they suffer from rheumatism, neuritis or other maladies which could be attributed to otherwise useful teeth which happen to show suspicious shadows in the x ray pictures.

3. I have acquaintances suffering from rheumatism, neuritis or what not; all of their diseased teeth have been removed to the complete satisfaction of both doctor and dentist, yet the patient shows no improvement.

These are the arguments commonly employed by certain of your patients when you try to convey to them an understanding of the dangers of focal infection; and the quaint part of it all is that as related to certain individuals, all of these empirical statements may be perfectly true; and the "common sense" reasoning seemingly triumphs, because the average layman cannot be brought to understand the varying tension in different persons, between the virulency of the invader and the activity of the defence.

The same microorganism which would proceed to a fatal endocarditis in one individual, would be promptly knocked out in the second round if it invaded another person suitably armed to defeat the enemy at the point of attack.

Varying are the results in the battles of this internecine warfare between the invading hosts and the organic defenders, and this fact lends a pseudoverity to the superficial observations of some of our patients who naturally want to keep their molars and other appendages as long as these human possessions continue to do the work for which Nature designed them.

What is more, I am in full sympathy with the layman's point of view, and would be moved by it, were I not keenly aware of a more sinister aspect of this problem, laden with hidden dangers and tragedies—real hazards, concerning which our patients are serenely and blissfully ignorant.

I have already alluded to my young, well qualified and conscientious dental friend, seeking to build up a practice, yet occasionally compelled to put the soft pedal on his conscience, lest he antagonize and lose valuable patients to the eager dental quacks who are willing to promise and perform anything. Now let me tell you something of my older friends in dentistry—men of skill and attainment who are harassed and overburdened with too much work. These excellent colleagues of mine occasionally make a slip just like that of their younger confreres, but from a directly opposite cause. The young man compromised, fearing to lose his patient; the older man overlooked his patient's hidden pathology because of hours always overcrowded, and my skilled colleague must perforce be expeditious if his patient makes no howling subjective complaint.

Thus I know of persons whose mouths glitter with golden caps, suggestive of precious stalactites at the entrance of a gold mine. These works of art easily pass the hurried and superficial inspection of a busy dentist, only in fortunate instances to be checked up later by röntgenographic studies insisted upon by the slower moving and more suspicious family doctor. At the present moment a close relation of mine whose dentist is one of my respected friends, passed the muster of his quarterly inspection. She had a beautiful piece of bridge work recently put in with fore and aft anchorage. In spite of the fact that my high class dental friend assured me that everything was all right, I had reason to insist on x ray studies of her teeth, and these showed the two bridge supports, and six other teeth, to be radically diseased. My dental friend in this case is a skilled and high grade technician. I do not hold him in the least responsible for this defection, since my relative made no complaints. He passed her along because superficially everything looked good. This case is quoted merely to illustrate the fact that even an up to the minute dentist may make a casual examination and give an opinion entirely devoid of value from a medical point of view.

Is it not, therefore, true that occasionally the younger dentist through fear, and the older dentist through oversight, may dangerously ignore some of the active etiological factors which so greatly concern medical men who are called upon to deal with the ultimate despoilation resulting from the silently hidden point of invasion of these insidious foes?

We medical men who deal with conditions remote from the purely mechanical problems of the dentist yet wherein it is clearly established that the lesion is of dental infection, are especially suspicious of capped teeth, of devitalized teeth, of pivot teeth cemented into a stump, and of fixed bridge work. We hold no brief against the dentist for his constructive endeavor, since we are aware of the entirely natural demands of our patients for mechanism to assist in mastication, and obliterate unsightly defects. These are important considerations, and doubtless in many instances the

mechanical work of the dentist is beneficial and bacteriologically harmless. But so often do we find that these devices—skillfully, safely, and usefully done at the time of their construction, later become (when not adequately watched) the primary breach in the wall, stealthily admitting those active enemies, which once holding a well established base of operation, have free opportunity to invade—with resultant incurable infections—vital organs whose normally healthful activities must now yield to the destructive will of the invading hosts. This statement is so certainly true that the doctor and the dentist should actively confer when constructive dental work is contemplated. Especially, too, must the patient be warned of the latent dangers of these otherwise useful mechanical devices; and instructed to return at safe intervals for inspection, even though there be no discomfort or complaint.

At the present time it is an open question whether or not a devitalized tooth which shows no gross pathology, is dangerous to its owner. It is not my present purpose to enter this controversy further than to remark that at least greater care should be exercised in root fillings, and an x ray picture should be made of them before dismissal of the patient. The imperfect root filling, the root filling which perforates the apex, the occasional one which leaves the canal and perforates laterally are certainly defective and likely dangerous.

There is an increasing class of dentists who have qualified in the entire pathology of the mouth; who are clinically acquainted with all of its diseases; who know the folly of trying to cure buccal infections if rotten tonsils or infected sinuses continually reinfect the areas of their work. These gentlemen, whether they know it or not, are stomatologists.

How many of us really know the pathology of the tonsils? Certainly no one is qualified to pass an opinion if he does not properly use a pillar retractor in his examinations of the throat. The ancient idea that diseased tonsils were the ones which filled the pharynx, rounded like crabapples, is not partly true. Some of the worst of them are retracted and adherent behind the pillars and cannot be seen at all by the unaided use of the tongue depressor. The tonsil must be everted and pressed upon by a retractor to bring it properly into view, and the pressure may produce cheesy, pussy or sanious exudate, which may be studied pathologically, but which in any case condemns the tonsils as etiologically dangerous.

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An Approach to the Study of Pyorrhea Alveolarus*

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The approach to the study of the disease which is localized in the stomatological region, commonly designated as pyorrhea or pyorrhea alveolaris, either in regard to the causation or the treatment of this disease, seems to have been overlooked in the past and to have been considered of secondary importance.

A careful examination of international literature on pyorrhea discloses that the approach or the point of view adopted by an investigator or group of investigators at different periods in the state of development of dental science have borne a corresponding relation to their interpretation of the etiology and the treatment of the disease. In other words, the approach of these men has colored their deductions. It seems, therefore, that at the very outset of the study, different groups have set out on their journeys of investigation in divergent directions. With regard to pyorrhea alveolaris, there has been this marked tendency by a group known as the localists and by another group known as the constitutionalists; the former maintaining that the local cause or causes are primary in the causation of the disease and that constitutional factors are secondary and the latter group holding to the opposite view.

In this discussion it is proposed to direct our attention primarily toward finding an approach or point of view which will clarify rather than confuse the practitioner in his choice, in a given case, of one therapeutic measure in preference to another. Pyorrhea alveolaris is a subject still under investigation and no universal method of treatment has been accepted to date by the profession at large. We must keep in mind, therefore, that no statements need be accepted as final, but should be assumed to be logically true in relation to the postulated and accepted hypothesis.

I am not going to advance an hypothesis or a theory explaining either the etiology or the advocacy of a universal method of treatment. I will try to show that we need first to state the nature of the problem and then adopt a method of approach. Above all, we must set out with a given point of view and carry out our investigation, step by step in logical sequence in order to build up a scientifically sound hypothesis. This implies a correlation of clinical findings with histopathological studies. The mere collection of clinical facts is not sufficient to lay the foundation for a scientific theory, as was clearly pointed out by Poincare (1) "Science is built up of facts, as a house is built up of stones; but an accumulation of facts is no more a science than a heap of stones is a house."

In the first instance it is essential to agree on general principles, at least as to what we mean when we speak of pyorrhea. Whether we adhere to one theory of the etiology of pyorrhea or to another, we must at least agree that we are discussing the same condition which presents the same clinical and pathological picture. Whatever term we may use and according to Blessing the etiology of pyorrhea alveolaris has been considered from 350 points of view and christened with 350 names, we must agree that a given discussion refers to the same mouth lesion. By first defining our subject and stating the problem we may adopt

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a basic method of procedure of verification of the theory.

By procedure I refer to what I should describe as a check which would correspond to a control as used in bacteriological investigations. Later on, I shall attempt to suggest to you a "check up," so to speak, on three factors in each case that presents itself, either in your private practice or in the hospital. To verify and establish the soundness of the positive value of a therapeutic measure it is necessary to have under "check" or control the following conditions: 1, focal infection must be eliminated; 2, the dietary must be regulated; 3, mouth hygiene must be maintained.

I have indicated the need of first postulating our problem, that is, it is necessary to differentiate mouth conditions which are designated as pyorrhea from a gingivitis or other mouth lesions which are not true pyorrhea. The necessity of studying pyorrhea under such conditions wherein all suspected foci of infection have been removed, where the dietary has been regulated and where mouth hygiene has been maintained cannot be overemphasized if we are to adopt a workable therapeutic method.

I wish to have it understood that the approach, or the point of view, in this paper is of major importance. If one adopts the point of view of the localist, he, at once, confines himself to a given therapeutic method, which of necessity limits his future investigation; if he adopts the constitutionalist's point of view, he, then, confines himself to another therapeutic procedure, which also limits his future investigation. There is need of adopting a point of view which will not limit one to the adherence of either theory of etiology and will still embrace the fields covered by both. The logical thing is to consider the condition of pyorrhea from the viewpoint of the interrelationship of mouth conditions to systemic disturbances. That is, having eliminated focal infections, having regulated the dietary, and, having established mouth hygiene; will the pyorrhetic condition continue to prevail? What may be the possible cause of the persistence of the condition after the removal of the vicious pathological cycle caused by local and systemic factors?

It might be in place at this point to call attention to the fact that both localists and constitutionalists have not taken cognizance of, at least not to an appreciable extent, the part played by focal infection resulting from root sepsis and general oral sepsis from improper dental prophylaxis as a factor in the causation of pyorrhea. The various theories of the etiology of pyorrhea which have been based upon clinical observation have been deduced, in a great measure, upon the disease when recognized. These theories are necessarily logical themes enabling us to account for cause and effect in the production of disease. The validity of these theories would, therefore, depend upon whether they satisfy the requirements of scientific hypothesis and whether in their applicability they produce the desired results.

From the stomatological point of view oral foci of infection must be accounted for, as I will later indicate in the explanation of the etiology or treatment of pyorrhea. The theory of focal infection has only of late received attention in Europe.

Considering pyorrhea from the point of view of the relationship of the condition of the mouth to the systemic condition, that is, approaching the problem from the stomatological point of view and with the case checked, we may then hope to postulate an hypothesis or theory of the etiology of pyorrhea with a certain degree of scientific exactness. I will present the views held by different authors as to what is pyorrhea and what is not and in what measure there is an agreement as to its etiology.

On my recent visit to Germany I had the opportunity of hearing the various views expressed by leading European authorities on this subject. I had the pleasure of hearing Professor Romer speak on pyorrhea on the occasion of the reception of the American Stomatological Committee in Berlin. He speaks (2) of pyorrhea as a typical alveolar pyorrhea which can be considered as the final stage of all forms of the socalled paradentosis. With regard to the clinical picture, as expressed by the condition designated as pyorrhea, he referred in the following terms: "The clinical picture of the alveolar pyorrhea is well characterized. This disease has been named thus, because its most striking symptom consists in pus oozing from the gum pockets pathologically deepened when the teeth always gradually loosen and at last fall out, because the ossific alveolar parts disappear gradually, down from the neck of the tooth to the extremities of the roots. Here the loosening is not confined to a single tooth but whole groups of teeth are always attacked and in serious cases even all the teeth of the upper and lower jaws."

Gottlieb (3) holds that in pyorrhea the condition is not localized in the tooth, and he differentiates three conditions; namely, filth pyorrhea, paradental pyorrhea and alveolar atrophy. Gottlieb points out that in the early stages of socalled filth pyorrhea, it occurs practically without pyorrhea alveolaris, and he maintains that in the early stages of the diffused atrophy of the alveolar bone, no indication is present to show any inflammation of the gum tissues.

Pickerill (4) distinguishes three conditions leading to pyorrhea; namely, gingivitis, dental arthritis and pyorrhea alveolaris. Acute gingivitis is attributed to bacterial infection or mechanical irritation, both of a local character. It not infrequently arises apparently through infection of the gingival tissues by the normal mouth bacteria, when the patient is subjected to particularly heavy stress of work, rather mental than physical or when the surroundings are unhygienic. The localized form is usually associated with some kind of mechanical irritation in connection with the teeth, such as wires, clasps or bands used to retain artificial dentures or to regulate teeth, or to the overhanging cervical edges of crowns or fillings.

Regarding the clinical picture of pyorrhea, he maintains that it is extremely rare that pyorrhea is confined to the gums proper. The joints between the teeth and the jaw bones become involved by the upper part of the periodontal ligament becoming infected. Thus a dental arthritis is set up, which may be simple at first but may become later suppurative. The condition then may be called an acute pyorrhea alveolaris.

Here, too, we note that a careful distinction is made between a gingivitis and a dental arthritis. When the hypertrophic and suppurative (5) forms of gingivitis are associated with dental arthritis the latter is or rapidly becomes suppurative also; we have present

then the disease long known as Rigg's disease or pyorrhea alveolaris (alveolar osteitis or suppurative marginal periodontitis).

The various terms used to designate the same pathological conditions and the same clinical picture, as employed by the different authors, as indicated, include the following: Black, "phagendenic pericementitis"; Talbot, "interstitial gingivitis"; Riggs, "Riggs's disease"; Greve, "caries alveolaris idiopathica"; Romer, "periodontitis chronica marginalis purulenta"; Witzel, "alveolitis infectiosa"; Magitot, "osteoperiostitis alveolodentalis"; Galippe, "gingivitis arthrodentaire"; Arkovy, "caries alveolaris specifica"; and others.

Another classification of pyorrhea, from the viewpoint of pathology, was presented by Cieszynski, as follows: I. Atrophia alv. idiopath, a, nonpyorrhea; b, pyorrhoica. II. Paradentosis (paracementosis) alveolaris pyorrhoica, a, marginalis; b, intraalveolaris. III. Atrophia alveolaris idiopath. et Paradentitis alv. pyorrh., a, marginalis; b, intraalveolaris.

Moorhead and Dewey (6) define pyorrhea as: "a chronic suppurative or nonsuppurative inflammation involving the alveolar process, the periodontium, the gingivæ and the ligamentum circulare and resulting in loosening and loss of the teeth."

According to these authors (7), pyorrhea is an osseous lesion: "The main characteristic pathological processes in pyorrhea are atrophy of the alveolar process, destruction of the periodentium and the formation of granulation tissue."

In 1901, Greve (8) pointed out the inadequacy of the term pyorrhea alveolaris as a term designating this disease, because the flowing of pus in any condition of the mouth, which involves only the gum pocket, may be mistakenly designated as pyorrhea. He emphasized the fact that the seat of true pyorrhea must be considered to lie and must be searched for in the alveolar bone and not in the gingive.

The symptom of flowing pus as an indication of the presence of the socalled pyorrhea has had its practical disadvantages, for from the clinical side the disappearance of pus has been recognized as a sign of cure. In 1914 Weski called attention to the secondary importance of the symptom of oozing pus in the diagnosis of pyorrhea. He points out that in cases where no pus was present, and which would clinically be considered free from pyorrhea, when röntgenologically examined with gutta percha points as indicators, these cases showed deep pockets and indicated the transitory form of horizontal atrophy of the bone to vertical atrophy of the bone. The therapy, whatever the cause, would therefore be the same in these cases as if pus were present. Weski (9) lays particular stress as regards prognosis, on diagnosis whether we deal with horizontal or vertical pyorrhea. He does not depend on the röntgenogram exclusively for the differential diagnosis in determining the presence of a horizontal or vertical atrophy, he depends also on the depth of the pocket and the general process of the disease in relation to the bone.

Weski (10) distinguishes vertical and horizontal bone atrophy and maintains that the horizontal absorption is more favorable from the viewpoint of recovery and the reduction of gum inflammation accompanied in pyorrhea than is the case with vertical bone atrophy.

The interpretation of the röntgenogram for diagnostic purposes is emphasized. Haber (11) calls attention to the possibility of noting a vertical atrophy in one instance and a horizontal atrophy in another instance by change in the angle in the taking of the röntgenogram.

The vast amount of work which has been done in bringing the study of this disease, either as regards its etiology or treatment, under some form of scientific approach, dates back to Fouchard (1746), Jourdain (1778), and Hunter (1780). The term pyorrhea alveolaris was first introduced to designate this disease by Toirac in 1839. Although the term has remained the same and to all practical purposes will probably remain the same, the meaning has been modified and almost totally changed.

Since Hunter's emphasis on the fact that the seat of the disease lies in the alveolar bone, the etiology of the disease has been studied both from the viewpoint of the local factors as well as from the standpoint of the constitutional disturbances. More recently Weski (12) has advanced a synthetic theory that, from his clinical observations and pathological studies he contends that this disease, occurring in the paradentium, is bicausal and not monocausal. That is, the internal or endogenous causes which are the constitutional disturbances and which may occur either singly or in combination and the external or exogenous factors, which may be calculus, ill fitting bridges and crowns, overhanging edges of fillings and the excessive use of some teeth.

A survey of the therapeutic measures advocated by the various authors may enable us to determine as to the positive specific value of a given treatment. Romer recommends a corrected dietary, plenty of fresh air, cure baths, local surgical treatment according to the radical surgical treatment by Neumann. The use of pacquelin, a preparation by Romer (13) for the obliteration of pockets, gum massage, bridgework and removal sliding bridge planes.

Kantorowicz (14) recommends for the treatment of pyorrhea (paradentitis) the removal of calculus, correction of overhanging edges of fillings, crowns and bridges, thorough mouth prophylaxis by the patient, the eradication of gum pockets and of bone pockets.

Gottlieb (15) suggests for the treatment of alveolar atrophy the relief of occlusal stress by proper bridgework, proper fixation of teeth and mouth hygiene. To strengthen the bone he advocates medicated baths and corrected dietary.

According to Krantz (16) the treatment consists of the removal of calculus, the use of medication and gum massage. Krantz lays stress on the local surgical treatment.

Neumann (17) advocates the radical surgical method known under his name. He emphasizes the need of massage, more especially vibration massage.

Monier (18) has given an effective method of surgical treatment of pyorrhea.

Euler (19) proposes six therapeutic measures which when properly employed will be effective in the cure of the disease in the early stages. These measures include the removal of calculus with mechanical or chemical means; the overcoming of infection by the use of salvarsan, Deutscharan serum or pyocyanase, the removal of granulation tissue, the use of radium

and massage in the form of vibration massage as indicated by Kieffer and Fleischman.

These therapeutic measures are advocated by the localists, adherents of the theory that pyorrhea is caused either by calculus forming a pus pocket or by infection. The Karolyi localists recommend elevating crowns for the correction of the occlusion to relieve the occlusal stress of the affected teeth.

Arkovy in 1894 speaks of the localists, the constitutionalists and the fusionists and their respective methods of treating pyorrhea. It is interesting to note that he divided the localists into three subgroups as indicated above, the third of which deserves our special attention. He refers to this group as the one which maintains the cause of pyorrhea to be "the disturbance of balanced occlusion of the jaws which produces coincidentally a false occlusion of individual teeth which brings these teeth into a condition of undue occlusal stress" (20).

Among those advancing the theory of occlusal stress, Karolyi (21) of Vienna is the outstanding exponent who since 1894 attributed the cause of pyorrhea to abnormal occlusal stress of the individual teeth.

In recent years other European investigators have renewed their interest in this theory; we have among them Bodot, Falke, Weski, and most prominent of all, Peter of Vienna.

This theory of traumatic etiology in the United States is associated with what is commonly known as periodontology. The adherents of this theory in the United States, the periodontists, attribute the primary cause of pyorrhea to be what is designated as traumatic occlusion which is synonymous with the term occlusal stress, advocated by Karolyi. Among the American exponents of this theory we may mention Stillman (22), McCall, Box, and others.

To correct traumatic occlusion whether due to restorations producing excessive vertical stress or where it occurs on natural teeth with no restorations, it is necessary to grind the occlusal planes off the teeth, which reduces the actual height of the tooth, thus making the occluding surfaces lower.

Talbot (23) divides the disease into six groups for purposes of treatment. He is interesting and suggestive, for he maintains that group five and group six must be handled by the physician, because in these cases so many other bodily symptoms are present and need to be considered first. With regard to local treatment in all cases, except those of anemia of the gums (group five) he advocates the removal of the deposits, the use of iodoglycerol every second day and the free use of the gum massage brush.

A survey of the various methods of treatment may for purposes of our discussion be divided under two headings, namely, 1, the treatment of the mouth locally; 2, the treatment of the body constitutionally. The former refers to the establishment and maintenance of mouth hygiene by local measures, such as the removal of calculus, the obliteration of pockets and gum massage; the second, constitutional treatment lies entirely with the realm of general medicine.

Let us now consider briefly the place that is given to oral focal infection and dental prophylaxis in regard to the treatment of pyorrhea. In a symposium on periodontia practice (24), among the nine steps recommended for the treatment of pyorrhea, we note the capping of teeth or the devitalization of pulps.

Notwithstanding the clinical and experimental evidence to the contrary, it is generally accepted that regeneration of tissue may be expected around teeth from which healthy pulps have been aseptically removed and whose canals have been properly filled. But a complete response of the regenerative forces is prevented if the general resistance to infection is lowered by the presence of systemic disturbances (25).

Rosenow (26) has shown that dead teeth, pulpless teeth or devitalized teeth, with the methods now available for the aseptic root canal treatment, are foci of infection and constitute a factor in the causation of systemic disease. He, furthermore, showed by experiments on dogs that conditions of hygiene and diet which were adequate to maintain weight and health in normal dogs were inadequate for dogs harboring foci of infection. The harm, therefore, from improper food or hygiene may be greatly exaggerated by bacteria harbored in foci of infection, a point not yet sufficiently considered."

Price (27) maintains that dental infections are in causal relationship to the disturbances in calcium metabolism. Infections may bring about metabolic changes and result in a variety of ill effects on the human body (28). We note then a vicious pathological cycle persisting in the presence of oral foci of infection. It has been clinically demonstrated that many of the cardiovascular diseases of the middle and late years of life originate in severe disease of early life through the circulation of virulent toxins of streptococcus. The degenerative types of eye lesions are seen to be the result of slow absorption of toxins of streptococcus from dead teeth (29).

Is it not suggestive to suppose that oral focal infection may similarly have a causal relationship to alveolar bone changes? Hess (31), Howe (30) and others have pointed out the relationship between proper bone formation and nutrition.

Moral (32) has pointed out the relationship between endocrine disturbances and pyorrhea alveolaris. At the same time Osborne (33) called attention to the relationship of focal infection and endocrine disturbances. Here, too, it is plausible to suggest a vicious cycle as regards focal infection, endocrine disturbances and pyorrhea. If we consider that neither dentists nor physicians are agreed on this subject of oral focal infection (34) and that dead teeth are not considered as foci of infection, to what extent are the clinical records and general deductions valuable with regard to establishing the etiology and treatment of pyorrhea?

While attention was called to the importance of gum massage as a therapeutic measure in mouth hygiene and for this purpose among the means suggested prior to 1898 we find the linen cloth wrapped around the finger, cotton rolls and hard food, later on in 1908 vibration massage was advocated by Kieffer, Fleischmann and Sorup and others (35), (36).

It is also interesting to look into the matter of so-called "oral hygiene," oral cleanliness in the United States, which refers to dental prophylaxis and which is advocated as a preventive measure in the prevention of pyorrhea. Stress is being laid on the brushing of the teeth (37).

(To be concluded)

Practical Therapeutics

THE USES AND THERAPEUTIC VALUE OF YEAST AND MORE PARTICULARLY OF DRIED BREWERS' YEAST

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As far as is known yeast was first prescribed by Hippocrates and Dioscorides, who recommended it in the treatment of leucorrhea. To them yeast was—well, just yeast—a substance. To us, in the light of modern science, the yeasts open up a whole world of their own which is still far from being wholly explored and understood.

To begin with yeasts are living organisms and more than five hundred families of true yeasts have been recognized, besides an even larger group of species so closely related to the true ones, as to have been very frequently confused with them. They multiply extremely rapidly by budding, mostly without any sexual movement, although in some families fertilization takes place through the end spores.

In composition and action yeasts are very complex and undoubtedly we have still much to learn about them. Leaving aside all reference to "fermentation" and its causes, we find that yeast cells, alive or dead, possess remarkable chemical and therapeutic properties attributable in part to their composition and in part to catalytic action.[1]

In the mind of the public—and perhaps to some extent in that of the profession—the word "yeast" immediately evokes the idea of vitamines. Brewers' yeast, particularly, has been found to be the most prolific source of vitamine B, the mysterious growth factor, and to contain traces of vitamines C and D. Naturally this led to the widespread use of yeast in nutritional and allied diseases, and, rather unfortunately, to a tremendous publicity campaign in which yeast and vitamine preparations were heralded as curealls without any regard to the origin or culture of the preparations exploited. At the same time not enough attention was given to other properties and component parts of the yeast cell.

It contains carbohydrates, fats, albuminoids. It has zymase, invertin, diastase, endotrypsin. It also contains phosphorus and lecithin. Recent investigations have succeeded in isolating from it a hormone-like substance, and have shown the existence (though not isolated) of a substance similar to insulin. It is evident that such a composition has innumerable possibilities of therapeutic application, if handled correctly and scientifically, instead of as a universal nostrum. On the other hand, if improperly used, i. e., if the preparation used is of impure culture and origin, results may be entirely negative.

Such negative results were encountered all through the middle ages and later, so that yeast was entirely eliminated from medical practice, although maintaining itself as a popular remedy in some countries, for instance in Mexico for smallpox and in France for furunculosis, bronchitis, and other conditions. The credit for its socalled rediscovery belongs to Neumann, a German physician, who in 1830 successfully used it for scurvy. Then, in 1897, Büchner isolated zymase, and about the same time Brocq in France and Lassar in Germany introduced it widely in therapeutics. Since that time its use has gradually increased in Europe, keeping pace with advancement in laboratory research. In the United States remarkable strides have been made from the purely scientific angle of the problem, but the profession as a whole has hardly begun to realize the many applications of yeast, particularly since it has become available in concentrated and palatable form, with all the advantages and none of the drawbacks of the fresh product.

It is manifestly impossible to cover the entire field of yeast therapy in a single article, so I shall lay stress especially on dried brewers' yeast, because a great majority of investigators have found this to be the most effective form. It has been shown by the Connecticut Experimental Station (Bulletin 240) to be superior to bakers' yeast, which has a lower vitamine content and is lacking in cholin and to some extent in lecithin.

Broadly speaking, brewers' yeast, dried or fresh, has been found effective in the following conditions:

1. Dermatological and cutaneous affections, and wherever pus forming organisms are a factor.
2. Deficiency diseases and certain debilitating conditions.
3. Gastrointestinal disorders.
4. Some general systemic diseases.

It also has a definite and logical place as a dietary and nutritional factor.

In the following review some applications may strike us as medical curiosities which we would not care to follow too closely; but by far the greater number of them are intensely interesting and would seem to place at the disposal of the practitioner an inexpensive and efficient therapeutic agent, whether used alone or as an adjunct to general treatment, and which is devoid of possible unpleasant aftereffects.

DERMATOLOGICAL AND CUTANEOUS AFFECTIONS

The French were the first to make extensive use of yeast in skin affections, and, generally speaking, with complete success. Fresh yeast, applied locally, had been in popular use for centuries, and German physicians report its successful use today in this form. But Brocq, Bolognesi, Faisan, Doyen and other authorities of equal weight soon began to administer it in dried form, internally (7, 27). French medical literature from 1900 to 1910 and later is filled with innumerable reports of cases treated with yeast in the Paris hospitals, including furunculosis, erysipelas, indolent chronic ulcers, acne vulgaris and rosacea, erythema urticaria, psoriasis, and ulcerative tonsillitis[2] (7, 27, 5, 19).

The average dose is three to five tablespoonfuls a day. More recently Mason (38) summarizes these applications as follows: "Yeast is serviceable in the

[1] It has been asserted that this does not represent true catalytic action, in which the catalyst itself remains unchanged, while causing or hastening changes in other substances. Yeast cells are gradually modified by the processes they cause and gradually lose their catalytic power.

[2] Hawk obtained the same results in most of these affections (25), including neuritis, arthritis deformans and rheumatic arthritis.

internal and external treatment of infections in which the staphylococcus pyogenes aureus and other pus forming organisms are factors."

American physicians who have tried yeast in these or similar cases are enthusiastic in its praise, wherever a carefully selected and thoroughly tested product has been used (25). Thus Dr. Gerstenberger (22), of Cleveland, reports nine cases of herpetic stomatitis and herpes labialis at the Lakeside Hospital which were successfully tested with a commercial preparation of yeast.[3] It appears well established that dried brewers' yeast has a decidedly beneficial effect in smallpox. D'Herbonnez (27) cites fifty cases in the Paris hospitals, treated with yeast, sometimes to the exclusion of all other treatment. In all instances there were resultant decrease in temperature, drying up of the vesicles and absence of suppuration. Other authorities mention similar observations.

Numerous factors may contribute to the action of yeast in these diseases. In general we may accept the explanation of modern American investigators (Dr. Robert McCarrick and others) that the vitamine B and possibly some other substance in the yeast markedly increases metabolism and aids the tissues in resisting infection.

YEAST IN DEFICIENCY DISEASES

In this group of diseases it is the vitamine B factor that plays the greatest part, and it is therefore of the utmost importance that the preparation used be reliable and tested as to vitamine content. It is only within the last decade that American scientists have discovered the underlying causes for the great efficacy of yeast in this field, and of the startling results which amazed earlier investigators all the more since they could not fully account for them. It was Seidell (44-47) who showed brewers' yeast to be the richest source of vitamine B, and Osborne and Mendel and others have fully covered the ground.

Dried brewers' yeast has been found almost indispensable in the treatment of beriberi (13-31), scurvy (26-32), rachitis (32-55), sprue and pellagra. Indeed, the United States Public Health Service, using the same commercial preparation used by Gerstenberger, calls it a specific for pellagra.

In rachitis it was again the French who first discovered favorable results, which they attribute in part to the phosphorus present in or radiated by yeast. Recently, Hess, McCann and Pappenheim (55) in their investigation of rachitis found casein alone to be ineffective in its treatment, but very potent when combined with yeast.

The classical experiments with polyneuritis in pigeons and the growth experiments on white rats are so well known as to need no further comment here.

Less widely realized is the practical application of the white rat studies to infants and backward children. There is no room left for doubt as to the value of a yeast addition to the diet of poorly developed and under nourished children (for instance as a flavoring in soups, etc.). Dr. Reyher (57) in 1922 reported on the successful treatment of forty-seven prematurely born infants. He administered daily one gram of dried yeast powder to the kilo of body weight and observed marked improvement in general vitality and particularly in weight.

[3]The product used was Yeast-Vitamine Harris, a product of the Harris Laboratories, Tuckahoe, N. Y.

YEAST IN GASTROINTESTINAL DISORDERS

So much has been written on its value in this field that I shall merely touch the more important points. To begin with, the remarkable experiments of Kleeblatt (34) on himself and some colleagues show that dried brewers' yeast stimulates the general secretion of gastric juices, an average increase of thirty to thirty-two per cent. being noticed, with more rapid development and longer period of activity. This led Heinz (28) to call it a stomachic and to recommend its use in tablet form in all disorders of the stomach and intestinal tract. Murlin, Raymond and Waltill (40) made clinical and laboratory tests of the value of yeast as a laxative. They found that dried yeast, while less effective in this respect than the fresh product, still retains its laxative property. Faisan (27) (40) stopped diarrhea with it, and successfully treated ten test cases of typhoid fever. They showed decrease in fever and rapid improvement in the excretions and the conditions of the intestinal tract. When the yeast treatment was interrupted the disturbances reappeared. He administered three or four teaspoonfuls three times a day. At St. Antoine Hospital, Professor Hayem (5) used a similar treatment for cholera infantum, acute enteritis, chronic enteritis, mucomembranous enteritis. He varied this with yeast enemas, but with less apparent success. Briefly then, it can be considered that yeast, preferably the dried brewers' product, is an invaluable adjunct in the treatment of almost any intestinal disorder. This is logical if the yeast composition and action are considered. The only surprising thing about it is that the profession has not used it more extensively.

YEAST IN CERTAIN SYSTEMIC DISEASES

Diabetes.—Yeast has the property of disintegrating sugar into carbon dioxide and alcohol. This led to to its being tried in the treatment of diabetes mellitus. Cassart (49) Bolognesi and Brocq observed decreased glycosuria and increase in weight and carbohydrate tolerance. Later investigators appear to hold varying views as to the reason for the action of yeast in this disease. Some maintain that it assists in changing the carbohydrates into dextrose; Lenne (36) believes its effect to be due to a hormonelike substance which it contains. Others recommend its use in conjunction with levulose or insulin, because of its vitamine B content. Euler and Myrbach (15) assert that it contains an antidiabetic substance, related to phosphorus metabolism, and physiologically and chemically close to insulin. Funk and Corbitt (21), on the contrary, point out that the effect of yeast in diabetes is very different from that of insulin, being slower but more lasting. They also think that crude yeast tends rather to raise than to decrease the blood sugar content; but from carefully grown cultures they have isolated an antidiabetic preparation.

In any event, regardless of the biochemical side of the question, the evidence is preponderantly in favor of the administration of dried yeast, provided a pure and careful selected product is used, as an adjunct to the general treatment of diabetes. The dosage must be left to the judgment of the attendant physician. As much as fifty grams daily have been given by mouth, and again only two tablets of a concentrated commercial preparation have been used three

times a day. Some practitioners have injected watery solutions of yeast; but this seems hardly a course to be recommended. The effect of yeast is particularly striking on diabetic ulcers.

YEAST IN TUBERCULOSIS

We find no record of any cure by the use of yeast alone. There are, though, numerous cases in which yeast, dried or fresh, has had a helpful influence. Cassart reports that large doses, from one to three ounces three times a day, reduced temperature and night sweats, and increased weight. Tuberculosis does not seem to be influenced by bakers' yeast. This is possibly due to the fact that the latter contains less vitamine B and is totally lacking in cholin, which, according to Ludwig, attacks the fatty envelope of the tubercle bacilli (*27, 27,* 32).

YEAST IN GRIPPE, PNEUMONIA, BRONCHITIS, AND TONSILLITIS

These are all favorably affected by dried brewers' yeast. Numerous case histories will be found in the voluminous literature on the subject, which fully justify the practitioner in using it freely (*7,* 8, 19, *27,* 25).

Interesting, though not conclusive, are the recent experiments of Urechia and Mihalescu (50), who injected a solution of brewers' yeast in ninety-one cases as a pyretogenetic agent. They found marked leucocytosis (20,000) and believe that injections of salvarsan made during the fever produced are especially well borne. They combine the spirillicidal effect of fever and arsenic. Their best success was obtained in cases of neurosyphilis.

In closing, it is well worth suggesting the use of dried brewers' yeast as a food tonic. It is similar in flavor to beef extract, and, according to Dr. Cowgill, of Yale, is superior in effect. German tests have shown that its flavor is preferred in soups, for instance (43).

In all cases of general debility it is a valuable addition to the diet, because of its vitamine B content. The lecithin it contains is a builder of bones and brain according to Burow, Fuerst, Sauceraux and Tolenatschev; it supplies nerve energy according to Koch; and increases the hemoglobin content of the blood, according to Danilewski. It is a preventive of arteriosclerosis, anemia, and scrofula. Chemical tests (37) have shown that the lecithin contained in brewers' yeast (in the phosphatides) is more closely related to that present in the human brain (kephalin) than is the lecithin in any other substance.

SUMMARY

1. Yeast, because of its composition and action, can play a far more valuable part in therapeutics than has been accorded to it. Dried yeast is as effective as the fresh product.

2. It is essential that a thoroughly pure and tested yeast preparation be used, preferably from brewers' yeast, which has a greater content of vitamine B, lecithin, and cholin than bakers' yeast.

3. It is not only a medicine to be taken in time of illness but can be recommended by the physician as an addition (in disguised form) to the diet, wherever a tonic, body or nerve builder is indicated.

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A complete list of references will appear in the reprints.

Editorial Articles

FUTURE STOMATOLOGY IN THE UNITED STATES

Considerable misunderstanding has reigned as regards the status of the now practising dental surgeons in the United States during the socalled transitory period. A preliminary report covering the plans for this period was read at the annual stomatological convention in April by Dr. George Reese Satterlee, chairman of the Council on Education and Hospitals of the American Stomatological Association. The association's educational plan for the training of dentists in the future as medical specialists has been explained in detail in an article in the *Atlantic Medical Journal* for February.

The next great issue that the American Stomatological Association is taking up is the fixing of this "transitory period." A preliminary discussion of the subject took place at the meeting held in New York city on December 16, 1925. The proposed plan is as follows: That the American Stomatological Association shall issue annually a stomatological medical register containing the names of dentists who have obtained additional training in medical subjects: 1, That this official register will facilitate cooperation between physicians and stomatologists, whose names shall appear in the register; 2, that hospitals and dispensaries may thus be aided in making their appointments of dentists and stomatologists by using the official register; 3, that registration shall be an assurance to the public and to the professions that the practitioners have had the necessary training in medical as well as in dental subjects; 4, that registration shall be limited to duly graduated and licensed dentists and also to physicians who devote themselves to stomatological röntgenology and who have obtained a certificate of proficiency to that effect from the American Board of Stomatology; 5, that registered stomatologists shall, during the transitory period, have all the privileges accorded to other medical specialists; 6, that registered stomatologists shall be entitled to active membership in the American Stomatological Association; 7, that the American Stomatological Association shall make every effort to have registered stomatologists join the American Medical Association and their local medical societies; 8, that the American Stomatological Association strongly urge that the American Medical Association accord to registered stomatologists the privilege of associate fellowship by virtue of their registration.

The American Board of Stomatology has for its objects, 1, the establishment of standards of fitness to practice stomatology; 2, the working out of plans of instruction suitable for special needs of practising dentists and physicians; 3, the gathering of data pertaining to facilities on hospital staffs, dispensaries, and clinics, with regard to stomatological services; 4, cooperation with hospitals and clinics in procuring registered stomatologists for appointments. Membership of the Board of Stomatology shall be composed of representatives of the American Stomatological Association, the Postgraduate Medical School of Stomatology, and other professional societies directly concerned with stomatology; examining members shall be appointed for three years; state stomatological societies shall each have one representative appointed for three years, and an advisory board shall be composed of dental and medical educators appointed by the Board from time to time. The function of the Board shall be, 1, to hold examinations at the annual stomatological meetings of the American Stomatological Association to pass on applicants for admission to the register; 2, to issue certificates of proficiency to those applicants who have fulfilled the requirements of the Board setting a standard for the practice of stomatology.

The Postgraduate Medical School of Stomatology, chartered by the University of the State of New York, but supervised by the American Stomatological Association, is governed by a School Council, consisting of representatives from the association, faculty members, and members of the Board of Trustees of the School. This was the first school of stomatology to be established in America, and is the only school in the country that has the endorsement of the International Stomatological Association, which officially represents stomatology throughout the world and establishes the standards of the teaching of stomatology in the schools of the various countries. The purpose of this school is to give to graduated and duly licensed physicians and dentists an opportunity to obtain systematic instruction in stomatology in the United States of the same type as that afforded to medical practitioners and stomatologists in the cities of Europe. The school aims to draw into its classes those practitioners in medicine and its specialties and those dental practitioners who wish to keep abreast of the progress of stomatology in relation to general medicine. Another educational need that the school will endeavor to meet as its resources increase is that of the professional instruction of qualified stomatologists. For those who are interested in public health work the school will afford a special opportunity to

obtain instruction from members of its teaching staff who have attained distinction in public health activities. The courses are arranged to meet demands in this particular field.

The school's clinical facilities are of an exceptional nature, since it has teaching and lecturing affinities with several of the leading medical institutions in New York city and other eastern cities. The physiological laboratories of University and Bellevue Hospital Medical College are at the disposal of students who are qualified to carry on research in dietetics and other problems pertaining to stomatology. Dr. Joseph Colt Bloodgood, clinical professor of surgical pathology at Johns Hopkins University Medical School, will receive special students in the Surgical Pathological Laboratory there, and will give a special course during June and September. Fordham Hospital, with its wealth of clinical material, is available to students, as are also the McClintock Memorial Laboratory and the Medical Laboratories Incorporated, under the direction of Professor Darling, radiologist.

The courses are open to duly qualified practitioners of medicine and dentistry approved by the committee on admissions. Others engaged in public health work may be admitted by special permission. The curriculum includes stomatological bacteriology, dietetics in stomatological practice, stomatological hygiene, stomatology and internal medicine, stomatology and focal infection, physical diagnosis, stomatology and public health, stomatological surgery, stomatotechnic (reconstructions), history of stomatology, röntgenology, clinical dietetics, anatomy of the stomatological region, physiology of stomatological hygiene, stomatological diagnosis, anatomy, physiology and pathology of the head, diagnosis and treatment of mouth lesions, and stomatological pathology.

The school year is divided into three school terms each of ten weeks' duration. Each course consists of twenty lessons, or two terms. The spring term begins in October, the winter term in February, and the summer term in June.

The study of diseases of the mouth has for a long time been considered as a subject of great interest to the medical profession in Europe. In Italy, Hungary, Roumania and Austria, only those who have a degree of M.D. are legally permitted to practise stomatology. In France, Belgium, Germany and other countries there are schools for the teaching of this branch of medicine. Within the past few years there has been an increasing interest in stomatology in the medical and dental professions in the United States. Practising physicians have realized the need of more knowledge of diseases of the mouth, and dentists have been eager to acquire additional information concerning the medical side of their profession. These needs are what the Postgraduate School of Stomatology is able to fill by means of its inclusive curriculum, lecture courses, and clinical opportunities.

RADIUM TREATMENT

There is still some difference of opinion as to the efficacy of radium and x rays in the treatment of disease. There are those who doubtless claim too much for this form of treatment while there are others who are inclined to minimize unduly its therapeutic virtues. As a matter of fact the truth lies in the mean. Radium and x rays are not a panacea but are extremely useful both by themselves and in conjunction with other methods, principally with surgery.

The British Medical Research Council issued recently a pamphlet in which the effect of the uses of radium on malignant and nonmalignant diseases is summarized. Five of the centres to which reference is made are in London hospitals, and four are in hospitals in Birmingham, Cardiff, Aberdeen, and Dublin.

The experiments have been carried out with a stock of radium salts which had been collected for military purposes during the war. Further quantities of radium salt had been provided by the British Empire Cancer Campaign. As might be expected special attention has been devoted to the effect of radium on cancer. The conclusion reached is that its value varies considerably with the site in the body and the histological character of the malignant growth.

As for cancer in the breast, it is stated that radium has a definite therapeutic value, local recurrences, treated by the method of surgical insertion, are often held in check, and may disappear sometimes after the employment of comparatively large doses of radium.

With regard to internal cancer affecting the generative organs of women, it is stated that as a palliative radium treatment has undoubtedly proved itself to be of the first value. Hemorrhage ceases in most of the cases, the local growth disappears in a large percentage, the patients feel better and put on weight, and in many instances life is prolonged. The histological evidence shows that where the growth is localized the malignant cells have been destroyed completely in certain cases.

The value of radium therapy in malignant growths of the mouth, nasopharynx, larynx and esophagus is stated to be bound up intimately with the technic employed. The irradiation of tumors in such sites, by numerous, though weak, radium sources, applied for a long time is a hopeful development, but results upon a larger number of cases are needed before any definite conclusion upon this technic can be arrived at.

Another conclusion drawn is that radium therapy is effective in a large proportion of rodent ulcers. There is, however, a tendency for recurrence of these growths. In cases where there has been a recur-

rence of activity of the cells at the surface of the growth it points to unusual resistance of such cells to irradiation.

It is a fact that the value of radium depends largely on the manner in which it is administered. A great deal of the technic of radiology is extremely complicated and in order to obtain from the method its best effects the operator must be thoroughly trained in its use. Indeed, as much skill is needed properly to apply radium or even x rays as is required for the accurate performance of surgical or bacteriological work. This point is not known generally to the layman and is apt to be overlooked. Another point which is often neglected is that to obtain the most satisfactory results from radium or x rays the cooperation of the surgeon and radiologist is a question of the greatest moment. An idea seems to be more or less prevalent that radium or x rays can stand by themselves, or rather that they can replace the surgeon, or worse, the view that an antagonism exists between surgery and radiology. This view has led to mistakes in the immediate past. A copartnership between these two branches of therapy promises the most encouraging outcome. And working towards this end continued research is demanded in the field of radiology and in that field in which the surgeon and the radiologist work together. Radiology, in short, is a valuable aid to surgery. Sometimes invaluable, in some cases it is effective by itself, but as a rule it is an aid to operative measures and it is in earnest cooperation between the surgeon and the radiologist that the best hopes for the future rest.

VOLTAIRE AND PUBLIC HEALTH

Many great writers have been dyspeptic or troubled with ill health all their lives and yet reached a green old age. Some famed writers have been virulently dyspeptic, surcharged with bile and yet almost seem to have enjoyed their bad health. Among this illustrious company were Charles Darwin, Thomas Carlyle, the dyspeptic *in excelsis* who frequently poured out bile in his writings, Samuel Johnson, Herbert Spencer, and last but not least Voltaire. Like many another man who lived to be old he was a puny infant and was in the habit of complaining throughout his long stay on earth that he was on the brink of the grave. He died at the respectable age of eighty-four from kidney disease accelerated by an overdose of opium. It is said now that the stories of the anguish and remorse of his later days do not seem to rest on any sound foundation.

Dr. J. D. Rolleston in a recent lecture at the Royal Society of Medicine referred to several features of Voltaire's life of interest to medical men. In his wonderful correspondence Voltaire was one of the best exponents of the lost art of letter writing; he was impressing constantly upon his friends the importance of temperance, especially in food, and Dr. Rolleston believes that his attainment of so advanced an age in full possession of his faculties was mainly due to his practising, with occasional lapses, what he preached.

In all his numerous writings, particularly in his correspondence and in the *Dictionnaire Philosophique,* he refers frequently to the medical profession. While in London where he lived for many years Voltaire became acquainted with Cheselden, one of the best known surgeons of the day, probably with Sir Hans Sloane, president of the Royal College of Physicians and of the Royal Society and founder of the British Museum; with Sir Richard Mead, a physician, a poet and friend of Dr. Johnson and with Freind, one of the earliest medical historians, as well as of several other Fellows of the Royal Society, of which Voltaire was himself elected a member in 1743.

He was a friend and patient of the great Boerhaave of Leyden. Voltaire was at one time an immoderate coffee drinker consuming, it is said, as many as twelve cups a day.

Voltaire, like Herbert Spencer, was very fond of arguing with his medical attendants and too little inclined to carry out their instructions. In matters of public health Voltaire showed the greatest interest. Throughout his life he was an enthusiastic supporter of inoculation against smallpox, which had been introduced by Lady Mary Wortley Montagu into England from Constantinople in 1721.

In one of his letters he refers to the Bishop of Worcester preaching in London, before Parliament, in favor of inoculation, and showing that it saved the lives of two thousand in the capital every year. The prohibition of inoculation by an edict of the French Parliament provoked a bitter protest from him. Voltaire, however, seems to have realized early the principal objection to inoculation, namely, the creation of a fresh source of infection, which was the reason for its prohibition in 1763 by the French Parliament and by the English Parliament in 1840, when its place was taken by vaccination introduced by Jenner in 1796.

In his historical works Voltaire referred to the importance of controlling epidemic diseases, especially plague. He condemned unstintedly the sanitary conditions of the Paris hospitals in which overcrowding and cross infection were the rule, the crowded state of the Paris cemeteries and the practice of burial in churches. He proposed the building of maternity hospitals for unmarried women as a check upon infanticide. Voltaire was one of the first prison reformers and raised his voice in protest against the unsanitary state of contemporary prisons.

1. Interns' home. 2. Superintendent's cottage. 3. Medical building. 4. Library building. 5. Cupola of administration building. 6. Surgical building. 7. Long connecting corridor. 8. Front end of chapel. 9. Medical building, former contagious pavilion. 10. Medical building. 11. Laboratory, dental and clinic building. 12. Medical and children's building. 13. Cross corridor connecting long corridor with service building. 14. Psychopathic department. 15. Garage and morgue. 16. Laundry. 17. Service building, including class rooms, kitchen, diet kitchen, dining rooms, drug room, storeroom, etc. 18. Medical, physiotherapy, and outpatient building. 19. Operating pavilion. 20. Ward building. 21. Communicable diseases building. 22. Leprosarium. 23. Power plant. 24. Bridge connecting Nurses' Home with service building. 25 and 26. Two cottages of the Nurses' Home.

Los Angeles General Hospital*

HARRY S. FIST, Ph.C., B.S., M.D.
Los Angeles

To describe satisfactorily the Los Angeles General Hospital it is necessary to consider several problems which are met with in caring for the large number of sick in a civic hospital serving a population of more than two millions.

The cost to Los Angeles County last year for medical and charitable services amounted to approximately four millions of dollars. Seventy per cent. of the dependency is due primarily to sickness or is complicated by it. If, therefore, a county hospital does not restore its patients to earning capacity, they and their dependents become county charges and constitute an additional expense.

"A county institution should have at least seven kinds of services in order to care for the different types of cases" (1).

1. Visiting nurses and physicians for indigent home patients, whose removal to an institution is unnecessary and unsuitable.

2. A home for the indigent (homeless and aged) where proper care may be given at a per diem cost per bed of about one dollar and fifty cents.

3. A chronic hospital for incurable sufferers from paralysis, arthritis, recurrent cancer, etc., where the cost is relatively low.

4. An institution for the harmless insane.

5. A sanitarium for the tuberculous.

6. A convalescent home costing one dollar and seventy-five cents a day, designed to bring patients to a state of health where they are again productive.

7. A hospital for acute cases—equipped to furnish skillful nursing and the best of modern medical and surgical attention, where nothing is spared in the attempt to furnish the best. The very finest of apparatus and housing must be supplied.

Consultation with experts in any field of medicine must always be available. In such a hospital the per diem cost is five dollars, and the average stay ten to fifteen days. By using every means possible, and so restoring the patient to health much more quickly, a large saving is effected.

At 1100 Mission Road, away from the noise of the city, among the palms which flourish so luxuriantly in the eternal sunshine of California, stands the Los Angeles General Hospital, a monument to modern medical science, and to man's humanity to man.

The normal capacity of 1,283 beds (including bassinets), is at present reduced to 1,150 beds because of rebuilding operations. Arrangements are complete for the erection of a new four million dollar addition, an acute hospital of 1,600 beds. This hospital is to be equipped with the finest of modern appliances for the diagnosis and treatment of disease.

In 1919 the house staff included some ten resident physicians and twenty-five internes. At the present time Dr. Phoebus Berman, the assistant superin-

tendent, has under his direction twenty-seven full-time resident physicians, fifty-eight interns (appointed by examination), and two dentists. The number of patients is practically the same as in 1919, but the type of cases has changed entirely. Not only do many more acutely ill patients receive better care, with sixty new inpatients admitted daily; but a large outpatient department has recently been established under the supervision of Dr. William Kristensen, averaging 432 outpatients daily.

A large and efficient social service department investigates the financial status and home conditions of each patient, thus supplying valuable information with regard to which of the seven types of service is required.

Yearly examinations are held along civil service lines, to determine the fitness of physicians for the staff. Only those who have satisfactorily passed said examinations are appointed. That it is a desirable service is evidenced by the large number of applicants.

The efficiency demanded may be deduced from the fact that all staff members (including the two hundred visiting senior and junior physicians), punch the timeclock on entering and leaving the institution.

The department of internal medicine, headed by Dr. J. V. Barrow, cares for the medical inpatients, of which there were some twelve thousand last year.

In the department of surgery, headed by Dr. J. H. Seymour, F.A.C.S., 4,915 major surgical operations were performed during the past year.

In the obstetrical department, of which Dr. E. M. Lazard, F.A.C.S., is chief, there were delivered 1,399 babies last year. During the past year a noteworthy contribution of this department has been the development of the intravenous use of ten per cent. magnesium sulphate, in the treatment of eclampsia (2). The outpatient maternity service is provided by the City and County Health Departments, under the care of Dr. George Parrish and Dr. J. L. Pomeroy.

With the County Health Department, the General Hospital works in liaison in providing dispensary service for outpatients in the outlying districts of the county, by supplying visiting physicians and nurses.

Thirty-seven thousand five hundred and forty-two radiographs and treatments during the past year, indicate the amount of excellent work done by the x ray department, under the direction of Dr. R. A. Carter.

The malignancy board, composed of Dr. Rex Duncan, Dr. James F. Percy, F.A.C.S., Dr. A. Davidson, and their associates, passes upon every case of malignancy or suspected malignancy admitted to the hospital, thereby making possible a greater reduction in the mortality of this dreaded disease.

Physiotherapy is conducted as a separate department. It includes massage, electrotherapy, thermotherapy, and heliotherapy. Last year this new department cared for four thousand five hundred inpatients and four thousand outpatients. The roof is utilized for heliotherapy, sunshine being available practically the entire year in Los Angeles.

The department of communicable diseases has recently been moved from the old buildings to new and modern quarters. The percentage of cross infections is now very low.

The department of pathology, under the direction of Dr. George D. Maner, performed a total of 707 autopsies last year, which was thirty-one per cent. of the deaths in the hospital. This is a very creditable number for California, where the number of cults is so large, and much credit is due the staff for the enthusiasm and interest which made it possible.

Showing the beautiful grounds and some of the buildings of the institution.

There is a nursing staff of 522, graduates and undergraduates.

In connection with the hospital is the School of Nursing, established in 1895, fully accredited, and requiring for admission a high school education or its equivalent. Last year there was graduated a class of forty-eight nurses.

Monthly meetings are held by the attending staff for the purpose of discussing subjects of medical interest, and all proceedings are published in *The Staff Bulletin*. Many of the papers here presented have appeared later in first class medical journals.

The Los Angeles County Medical Society holds its annual clinic week at this hospital, December 1st.

The faculties of the College of Medical Evangelists and the Post Graduate School of the University of California include many of the staff of this hospital, who use the wards for bedside teaching. All year-'round, the Los Angeles General Hospital welcomes to its "ward walks" medical visitors from all over the world.

REFERENCES

1. From the report for the Fiscal Year ending June 30, 1925, Los Angeles General Hospital, by Dr. N. N. Wood, Supt.

2. Lazard, E. M.: Puerperal Eclampsia and MgSO4, *American Journal of Obstetrics and Gynecology*, March, 1925.

2007 Wilshire Boulevard.

News Items.

Prenatal Consultation.—At a recent session of the Academy of Medicine of Fulton, N. Y., prenatal consultations and nursing work connected therewith received unanimous endorsement, and a prenatal consultation unit will be scheduled for Fulton in the near future.

No Accident Day for Children.—This day was celebrated on May Day by the cities of New York, Boston, Washington, Baltimore and San Francisco and was marred by only one fatality, the accidental death in New York of a child. The tallies were kept and tabulated by the police departments of the various cities.

Tuberculosis as a Social Problem.—The University of Michigan will offer from June 21st to July 30th and from June 21st to August 13th a course in work with the tuberculous. Theodore J. Werle and Edith Jane Foster, of the Michigan Tuberculosis Association will supervise the course. The curriculum will include tuberculosis as a social problem and the duties of public health officials, nurses, lay health workers, social workers and club women.

Donation to Cancer Fund.—Announcement was made on May 2d by Winthrop W. Aldrich, in charge of the campaign for a million dollar endowment for the American Society for the Control of Cancer, that John D. Rockefeller, Jr., had made an unconditional gift of $125,000 to the society. He has made also another gift of $10,000 to defray the expenses of a congress of the leading cancer specialists of this country and Europe to be held at Lake Mohonk in September.

A Course in Public Health Legislation at Columbia.—The summer courses at Columbia University will, as for the three past years, include lectures on public health legislation and laws. These will be given from July 6th-16th for one hour daily from one to two p. m. These ten sessions will count as one point and will cost each student $10 as a tuition fee. Persons interested should communicate with the Director of the Summer Session, Columbia University, New York City.

A Course of Lectures on Mental Hygiene.—The National Committee for Mental Hygiene and the Committee on Mental Hygiene of the State Charities Aid Association are planning for next winter a course of lectures on mental hygiene similar to those given on Tuesday afternoons during the past winter at the New York Academy of Medicine. The enrollment for the course was as large as the seating capacity of the auditorium permitted, yet many had to be refused and turned away from the entrance, so great was the interest displayed in the fourteen lectures.

New Regulations for Safeguarding Health of Painters.—Announcement has been made by the Massachusetts State Department of Labor and Industries that new rules for those engaged in the painting business have been adopted. These became effective on January 1, 1926. These regulations concern general safety provisions, requirement for registration, and general health requirements especially intended to provide protection for workmen using spray coating apparatus. Dr. Wade Wright was chairman of a special committee which assisted the Department of Labor and Industries in drawing up the new rules.

Health Activities in Syracuse.—The city of Syracuse, N. Y., has assumed in its budget for 1926 the maintenance of various health activities in the Health Department for which $40,060 was spent in 1925 by the Milbank Memorial Fund, and similarly in the Department of Education school hygiene service for which last year the Fund spent $16,090. The total expenditure made by the fund in 1925 for the Health Department was $72,035, and $20,833 for the Department of Education. The appropriation made from city funds by the city financial authorities for the Health Department for the current year is $224,800, and for the school hygiene service in the Department of Education, $62,500. Much of the credit for this action on the part of the city authorities is due to the recent health demonstration in Cattaraugus County.

A Sedgwick Memorial.—A William Thompson Sedgwick Memorial Lectureship and Medal Fund is being promoted by appropriate committees. Dr. Victor C. Vaughan was the proposer of the memorial. Through it students in public health at the Massachusetts Institute of Technology will every year be enabled to listen to representative authorities in the field of health, and medals will be awarded by the American Public Health Association, custodian of the medal fund, to men who render service in the work. Subscriptions should be sent to the William Thompson Sedgwick Memorial Lectureship and Medal Fund, 370 Seventh Avenue, New York City, addressed to Homer N. Calver, secretary of the medal committee, or to C. E. Turner for the lectureship committee.

Hospital Provisions in New York State.—According to the report of the New York State Board of Charities for the last fiscal year, there are 60 public hospitals in the State, exclusive of those for mental diseases, with a total bed capacity of 17,292. The average daily census was 12,711 or 73.5 per cent. of utilization. The average per capita cost was $3.31.

Reports from 195 private corporate hospitals representing about two thirds of the total number in the State give a bed capacity of 21,865 with an average daily census of 16,706, or 76.4 per cent. The per capita daily cost was $4.75 or $1.44 per day more than the public hospitals. In New York City the per capita cost for private general hospitals was $5.83. County tuberculosis hospitals had an average per capita cost of $2.81.

The lower percentage of utilization of public hospitals is explained by the fact that such institutions made provision for the care of communicable disease cases which are seasonal in their highest incidence.

Personal.—Asst. Surgeon General F. C. Smith, of the U. S. Public Health Service, has recently been in Perry Point, Md., for a conference with the officer in charge of the Supply Depot.

Miss Ella Sandstrom has been given charge of the instruction in occupation therapy of the new bureau recently opened at the Auburn Municipal Sanatorium, Auburn, N. Y. Miss Sandstrom has been a patient for several years in the Chautauqua County Tuberculosis Hospital where she developed efficiency as an occupation therapy aide while convalescing.

Regional Consultant Daisy M. O. Robinson, of the U. S. Public Health Service, attended the recent meeting of the Medical Women's National Association at Dallas, Tex.

Dr. Thomas Parran, Jr., of Raleigh, N. C., has been studying local methods in North Carolina of communicable disease control.

Dr. Emil Krulish, of Ellis Island, N. Y., attended the recent conference at Washington of field officers of the Office of Indian Affairs.

Dr. J. F. Montague, of New York City, recently addressed the Milwaukee Academy of Medicine on the subject of Popular Fallacies Concerning Hemorrhoids.

Dr. Grover A. Kempf, of Washington, D. C., has recently been investigating child hygiene conditions in Maryland.

Surgeon L. R. Thompson, U. S. Public Health Service, has been in Greenville, S. C., in connection with an investigation of respiratory diseases among cotton workers.

Leonard Greenburg, Associate Sanitary Engineer of the U. S. Public Health Service, will go from New Haven, Conn., to Niagara Falls, N. Y., the latter part of the month to study benzol poisoning.

Lieut. G. E. Mott, of the Medical Corps of the U. S. Navy, has devised a "posturegraph," a machine devised to record posture defects, which is described with illustrations in the *Nation's Health* for April.

Miss Helen F. Connally of Troy has been appointed County public health nurse of Schuyler County, N. Y., by the Public Health Committee and the Board of Supervisors of the county.

Society News and Notes.

The Committee of Medical Education of the New York Academy of Medicine and the New York Tuberculosis and Health Association have arranged for a course in cardiology for North Harlem physicians. The sessions began on April 23d and are being held weekly on Friday afternoons. Five sessions will be held at the Harlem Hospital, six at the Presbyterian Hospital, and one at Mt. Sinai Hospital. The program for the remainder of the course is as follows: May 7th, at 2 p. m., at the Presbyterian Hospital, the arrhythmias; the electrocardiograph, by Dr. Archibald M. Strong; May 14th, at 3 p. m., at the Harlem Hospital, the rheumatic heart; mitral stenosis and insufficiency; adherent pericardium, by Dr. Angelo Sala; May 21st, at 2 p. m., at the Presbyterian Hospital, the decompensated rheumatic heart, by Dr. Robert Loeb; May 28th, at 3 p. m., at Harlem Hospital, fibrillation and digitalis, by Dr. Milton B. Rosenbluth; June 4th, at 4 p. m., at Mt. Sinai Hospital, amphitheatre, autopsy room, bacterial endocarditis, by Dr. George Baehr; June 11th, at 3 p. m., at Harlem Hospital, syphilis of the heart; aortitis and aneurysm, by Dr. Thomas A. Martin; June 18th, at 2 p. m., at the Presbyterian Hospital, degenerative heart conditions, by Dr. Martin De Forest Smith; June 25th, at 3 p. m., at the Harlem Hospital, hypertension; blood chemistry, by Dr. Leopold H. Berliner; July 2d, at 2 p. m., at the Presbyterian Hospital, the principles of cardiac therapy, by Dr. Walter P. Anderton; July 8th, at 3 p. m., at Harlem Hospital, drug treatment, by Dr. Lewis K. Neff.

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The National Committee for the Prevention of Blindness has announced that the Leslie Dana Medal for the most outstanding achievement in the prevention of blindness will be awarded this year to Miss Louise Lee Schuyler, of New York City. In 1908 Miss Schuyler launched a movement to combat preventable blindness, and under her leadership many health and educational agencies cooperated to bring about in almost every state legislation prescribing treatment by doctors, midwives and nurses of the eyes of newborn children, the most common source of blindness in later years. This movement grew to include the prevention of blindness from all causes. Miss Schuyler was responsible for the founding of the National Committee for the Prevention of Blindness.

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The Brooklyn Urological Society has recently elected the following officers: President, Dr. Samuel Parnass; vice-president, Dr. Albert Harris; secretary-treasurer, Dr. A. Ravich.

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The last spring meeting of Caduceus Post, American Legion, is being held on the evening of Wednesday, May 19th, at the New York Athletic Club. Dr. John F. Connors and Dr. Harlow Brooks will both speak on their recent hunting trips.

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The American Association for Medical Progress distributed a memorandum of the life and work of Dr. Edward Jenner, with a bibliography and a series of suggestions for public observance of the one hundred and thirtieth anniversary of Jenner's first vaccination, on May 14th.

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The American Psychiatric Association will meet in New York City, June 9th-12th, with headquarters at the Waldorf-Astoria. The finance committee requests that all interested in psychiatry will contribute to the fund for the entertainment of the members at that time. Checks may be mailed to Dr. C. C. Burlingame, 17 East Forty-second Street, New York City.

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The Educational Foundation of the Committee for Relief in Belgium has appointed Dr. Frederick P. Gay, professor of bacteriology at Columbia University, to spend next year in giving lectures on immunology at the universities of Brussels, Liège, Ghent and Louvain.

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The New York Academy of Medicine announces that, commencing June 15th, the Library will be closed at 5 p. m. It will probably be closed all day to readers, from July 15th until September 15th, while the collection is being moved into the new building.

The New York State Charities Aid Association's State Committee on Tuberculosis and Public Health will hold its annual convention of state and local committees at Olean, Cattaraugus County, N. Y., June 1st-3d. Cattaraugus County is the centre of the rural county health demonstration, undertaken with the advice and financial assistance of the Milbank Memorial Fund. Sir Arthur Newsholme, M.D., K.C.B., will address the convention on the first day. During the three days of the meeting, delegates in attendance will be conducted to all parts of the county to see at first hand the work of the three local operating agencies in the health demonstration—the County Board of Health, the county wide School Hygiene District, and the Tuberculosis and Public Health Association. One of the features of the conference will be a visit to the Alleghany State Park where the children's health camp of the Cattaraugus County Tuberculosis and Public Health Association is located.

* * *

The second annual meeting of health education directors of state and local tuberculosis associations is being held at Atlantic City, May 17th-19th, with headquarters for the staff at the Malboro-Blenheim Hotel. The program includes standards for school health service and how tuberculosis associations may help to develop them; problems of rural school sanitation and how tuberculosis associations may help to solve them; a practical plan of cooperation between agencies fostering nutrition work; types of service which tuberculosis associations may give to teachers; a session on teacher training is planned to be held jointly with the division of health education of the American Child Health Association. Small group conferences on special subjects have been arranged.

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One of the features of the American Health Congress being held in Atlantic City, May 17th-22nd, is a pageant on child health, the purpose of which is to symbolize the purpose of the congress, namely, the closer understanding and cooperation between the sixteen national organiaztions comprising the National Health Council. The pageant committee that has developed the plans was appointed by Dr. A. J. Lanza of the National Health Council. The scenery and costumes have been designed and made by the children participating in the pageant.

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Miss Mabel T. Boardman, secretary of the memorial fund committee of the American Red Cross, recently addressed a large assemblage in New York City, in the interest of the proposed women's war memorial in Washington for which Congress has appropriated $150,000. Miss Boardman demonstrated by plans that the new building is to have a laboratory, demonstration station, and a school of chapter activities. She explained how large numbers of volunteers from all parts of the country might be trained to render services that could be utilized by their own communities when not required for Red Cross work.

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Heredity as a factor in public health was discussed in a lecture given recently in London by Dr. Redcliffe N. Salaman, under the auspices of the Jewish Health Organization of Great Britain. He said that a mental defective who lived to be fifty and is cared for by the state could not cost less than five thousand pounds sterling. Sterilization of mental defectives or segregation of these individuals for life seems too drastic remedies to many, but without such legislation not much can be accomplished. Parents of children deficient in any way should do their utmost to prevent them from marrying. In Jewish circles marriage has been considered with such veneration that even degenerates have been forced into marriage, and it is to this fact that their group owes its many defectives.—*Lancet.*

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The Blind Relief Association of India, with headquarters at 65 Kalbadevi Road, Bombay, has sent out an appeal, with descriptive literature, for assistance in maintaining its work, the field of which has become so extended that available funds are far from adequate to finance even a small part of the work. The report emphasizes the large number of the blind in India whose condition could easily have been prevented by the proper measures, and the necessity of reaching the vast numbers of the poor, the ignorant and the superstitious through popular education in personal hygiene, as well as through medical and surgical relief.

Book Reviews

TESTS FOR LIVER FUNCTION

L'Exploration fonctionelle du foie et l'Insuffisance hépatique. Par Noël Fiessinger et Henry Walter. Paris: Masson et Cie, 1925.

Feissinger and Walter first give a detailed description of all the functional tests for the liver, and then show how useful some of these tests are for the clinic. The authors point out that up to recently the secretion of the liver (bile) could be examined merely in its changed form, as it is found in the stool. The duodenal tube made it possible to obtain the bile from the duodenum in pretty pure form, which marks a great advance. Next to the examination of the bile, the most important practical test is the urobilinogen in the urine, as evidenced by Ehrlich's test. For the presence of urobilinogen in marked amounts in the urine always indicates an insufficient functioning of the liver.

With regard to jaundice the authors consider catarrhal icterus as always due to an impairment of the liver cell, which becomes fissured and permits the bile to enter the general circulation. They do not accept the old theory of mucous plugs obturating the biliary canals.

The present book can be considered as one of the best treatises of the liver and is herewith recommended as such to the medical profession.

UROLOGY

Young's Practice of Urology. Based on a study of 12,500 cases. By Hugh H. Young, M.D., and David M. Davis, M.D., Johns Hopkins University. With the Collaboration of Franklin P. Johnson. Two Volumes. With 1003 Illustrations, Twenty Being Color Plates, by William P. Didusch. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 1484.

The authors have produced a work of unusual character and great value. Based on twelve thousand five hundred urological cases, carefully studied and checked up with much effort, we have a vast fund of urological information built up largely upon the personal experiences and inventions of the principal author and his staff.

Particular emphasis naturally is laid on this phase of the subject. Much space is devoted to an elaborate study of the new germicides, mercurochrome and meroxyl; the intravenous administration of antiseptic dyes in general infections; the development of a possible *therapia sterilisans magna;* Young's instruments and his many surgical procedures, many of which have become standard. All of this not only is to be expected from so versatile a surgeon as Young, but it is to be commended, for it gives us a fairly complete picture of his manysided and often ingenious activities in the field of urology.

The first volume is devoted to obstructive uropathy, urogenital infections, urolithiasis, hypertrophy of the prostate and urogenital neoplasms; the second volume considers malformations, traumatisms, operative surgery of the urogenital tract, and miscellaneous allied topics.

The work may be said to be cyclopedic in character. To review these two large volumes within the customary limitations of time and space, would be an almost impossible task. The most that one can say is that the author and his assistants have covered the subject of urology in a masterful manner after a prodigious amount of labor. If any criticism justly can be applied to the work, one might say that it is altogether too comprehensive for the general practitioner, because there is too much in it. Its great merit is at the same time its worst and only fault. Works of this kind serve a mighty purpose as an aid to the profound student of urology; as such, it is perhaps the best work of its kind that has come to our notice.

The illustrations, more than one thousand in number, are skilfully and beautifully done, many of them being original. Typographically the volumes are all that could be desired. Authors and publishers have combined to produce a monumental work, a fine tribute to the high plane achieved by American urologists.

PERTUSSIS

La Coqueluche. Par Dr. Henri Stévenin, médecin des Hôpitaux de Paris. Bibliothèque des Connaissances Médicales dirigée par le Docteur Apert. Paris: Ernest Flammarion, 1926.

This little volume of the Apera series is intended to present, in terms intelligible to the lay public, our present knowledge of the symptoms and treatment of pertussis which, as Stévenin remarks, is so characteristic a disease that the diagnosis is often made without recourse to a physician. Its high contagiosity, long duration, and distressing symptoms, too, are well known. Recent discoveries in the domain of bacteriology, immunization, and serotherapy have changed our viewpoint of treatment. All this is taken into consideration. There are interesting chapters on hygiene and prophylaxis, the question of open air treatment, complications and sequelæ and their prevention. One might note, in passing, that no mention is made of the tracheal injection treatment, of antipyrin, and that the American contributions to this important subject are practically ignored.

PREVENTIVE MEDICINE

Disease Prevention. By Herbert H. Waite, M.D., Professor of Bacteriology and Pathology, University of Nebraska. New York: Thomas Y. Crowell Company, 1926. Pp. 667.

The author states in his preface that it is not his intention to make this book an exhaustive monograph, but a digest written especially for all those who have neither a medical nor an engineering background, and who would, therefore, have some difficulty in securing information from original sources. He adds that the book is primarily intended for social workers, state and municipal officials, hospital workers, and all those who are engaged in the highly laudable work of combating disease. The headings of the twenty chapters show how thoroughly he has covered his subject; these are: Introductory and Historical, the Scope of Sanitary Science, Epidemiology, General Methods of Disease Prevention, Prevention of Diseases Spread Largely Through the Intestinal Tract, Diseases Transmitted Through the Respiratory Tract, Prevention of Diseases of Man Contracted Through Association With the Higher Animals, Diseases Caused by Animal Parasites, Prevention of In-

sect Borne Diseases, Prevention of Venereal Diseases, Prevention of Diseases Conveyed Through Milk and Other Foods, Prevention of Food Infections and Intoxications, Prevention of Water Borne Diseases, Prevention of Soil Borne Diseases, Miscellaneous Communicable Diseases of Uncertain Cause or Mode of Transmission, Prevention of Diseases Due to Industrial or Occupational Hazards, The Public Health Nurse as a Means of Preventing Disease, Measures for the Prevention of Infant Mortality, Value of School Inspection as a Means of Controlling and Preventing Disease, and Prevention of Diseases Transmitted by Parents to Their Offspring. A list of selected references follows the text.

A good deal of clinical material is included in order to give the readers some insight into the varied manifestations of the diseases discussed. The author states that he has given more space to the consideration of diseases caused by animal parasites than is usually devoted to them in a work of this character, because they are more common than is generally believed, and might be avoided by preventive measures. Procedures which have been tried and so established as valuable, are emphasized—in fact, the emphasis is laid throughout on established facts rather than upon theories, although due consideration is given to procedures which, although in the experimental stage, promise to be of future value.

STUDIES FROM THE UNIVERSITY OF HELSINGFORS

Arbeiten aus dem Pathologischen Institut der Universität Helsingfors (Finland). Begründet von Prof. emer. Dr. E. A. Homén. Herausgegeben von Prof. Dr. Axel Wallgren. Neue Folge. Vierter Band, Erstes und zweites Heft. Mit 18 Abbildungen im Text. Jena: Verlag von Gustav Fischer, 1926. Pp. 226.

Three monographs are included in this number of the Studies from the Pathological Institute of the University of Helsingfors. Arno Saxén contributes Pathological and Clinical Studies on the Primary Papillomas and Carcinomas Originating in the Nasal Cavity and the Adjacent Accessory Sinuses. He divides the carcinomas into papillary carcinoma, keratoid carcinoma, basal celled carcinoma, solid cylindrical celled carcinoma, and medullary carcinoma, and discusses the histological appearance and characteristics of each form separately. Round cell infiltration is especially emphasized. The clinical study is divided into two portions: 1, symptomatology and diagnosis, and 2, treatment and prognosis. Sixty-one case histories are also included, as is also a very extensive bibliography.

Dora von Wendt's contribution is Bacteriology of Peritonitides from Ulcer; A Clinical Bacteriological Study. She concludes that the bacterial flora of the ulcer peritonitides may be characterized as a reduced and somewhat modified flora of the mouth. The number of the bacteria is generally fairly unimportant, and the types found are usually of low virulence. The predominant bacteria are nonhemolytic streptococci. Anaerobes are of secondary importance. The prognosis is not made much easier by bacteriologic studies.

The Diagnosis of Amyloid Disease of the Conjunctiva is the work of Ivar Wallgren and Mauno Vannas. They show that the connective tissue is not destroyed nor does it disappear when the amyloid is deposited around it. Furthermore, it appears that the connective tissue proliferates at sites where the amyloid appears in the tissue.

MEDICAL ANNALS

Annales de Dermatologie et de Syphilographie. Fondées par A. Doyon. VI Serie. Tome Vi. No. 12. December, 1925. Paris: Masson et Cie, 1925.

This number contains a complete and fairly detailed report of the Conference on Hereditary Syphilis held at Paris in October of last year. There are, in addition, a number of highly interesting and instructive original articles, notably a continuation by Thibierge of his *Dermatological Lessons of the War,* 1914-1918. Dujardin and Decamps discuss the combined action, in dermatology, of anaphylaxis and "pexic" actions, by which they understand the property of certain tissues, particularly that of the liver, to fix proteins or antigens. Dracoulides of Athens has a short but suggestive note on the "female moustache" as a stigma of hereditary syphilis. He brings it into connection with a state of hyperadrenalism, due to a relative lack of ovarian hormone, which latter is caused by previous luetic damage to the gonad.

Annals of Otology, Rhinology and Laryngology. Founded by James Pleasant Parker. H. W. Loeb, M.D., Editor in Chief. Vol. XXXIV, No. 4. St. Louis, Mo., December, 1925.

Among the society proceedings reported at length, we find that of the Chicago Laryngological and Otological Society of April 6th, and the annual meeting of the American Otological Society. Among the original articles are interesting presentations by Jones and Knudsen on Facts of Audition [they are just as much facts of acoustics], by Hammond, of Boston, on Hearing Results in Radical Mastoid Operations, and by Fenton on Vaccines from Hemolytic Cocci in Sphenoethmoidal Disease. Eves has an instructive paper on the Diagnosis of Lateral Sinus Thrombosis, and Morse discusses the prophylaxis and treatment of repeated coryzas. The ophthalmologist will be interested in Gittin's case reports of orbital cellulitis complicating paranasal sinus disease in children.

Medicoliterary Notes.

Midwifery Supervision Succeeds in New Jersey is the title of an interesting article in the April issue of the *Nation's Health* by Dr. Henry B. Costill, director of the New Jersey State Department of Health.

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The *Survey Graphic* for April contains a series of pictures illustrating diphtheria immunization taken in Syracuse and Cattaraugus County, N. Y., by Louis W. Hine. The photographs are prefaced by a brief summary of the purposes of the recent state wide campaign against diphtheria.

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E. H. Lewinski Corwin, Ph.D., director of the Hospital Information Bureau of the United Hospital Fund of New York, has an interesting article in the issue for April 2d of *Public Health Reports* on the Community Responsibility of Hospitals.

* * *

A general child welfare clinic has been opened in the pediatric department of the University of Virginia Hospital, the work to include the teaching of pediatrics to nurses and medical students, and general human welfare. One of the objects of the new clinic is to reach the children of the moun-

tain folk of the western part of the State of Virginia. In cooperation with the department of psychology of the university, psychological tests will be made of the children and their parents, and, with the department of anatomy and anthropology, observations will be made of nationality and race characteristics.

* * *

The *Forum* for February contains an article by E. E. Free on the measurements recently made by him of New York's noises. A map has been drawn up, showing the city's silent places—if any—the differences between day and night sounds, and day and night stillnesses, and the results related to the life and habits of neighborhoods in terms of traffic, sound distribution, and other agencies during day and night. This has led to the derivation of a "noise level," in other words, the average noise intensity of the city has been determined on the basis of the sound measurements made. The work was done with a view to creating an authoritative basis for attempting to remedy noise nuisances prevailing in such a degree as to make certain localities undesirable for residence purposes.

* * *

Two recent publications of interest from Henry Holt & Company are the *Game of Love and Death,* by Romain Rolland, one play of the series of twelve upon which he is working, based upon the events of the French Revolution, and planned to reveal the resistless force of elemental passions upon faith, patriotism and the social instinct; and William Beebe's new book, the *Log of the Sun.* The latter is one of Beebe's early works, and is reproduced with the original full color illustrations.

* * *

According to a recent report of the Joint Committee on Methods of Preventing Delinquency, the cities of St. Louis, Dallas, Minneapolis, St. Paul, Los Angeles, Memphis and Richmond now support child guidance clinics. At these clinics problem children are given systematic physical, psychological and psychiatric examinations, and are helped by trained workers to try to adjust themselves to more normal habits of life.

* * *

The Illinois *Institution Quarterly* has been superseded by the *Welfare Magazine,* which made its first appearance in January, 1926. This issue contains the proceedings of the fifth annual Illinois Conference on Public Welfare held at Urbana in October, 1925.

* * *

Curing the Criminal is the title of a recent publication of the Macmillan Company by J. O. Stutsman, general superintendent of Rockview Penitentiary, Pennsylvania. The book discusses in a sane and unsentimental manner the evolution of humane methods, the transition of prison architecture, "prisons without walls," prison industries and compensation of prisoners, maintaining discipline in prison, the value of recreation for prisoners, self government of prisoners, the police as a deterrent agency, socializing the court, the death penalty, "probation or jail," and parole.

* * *

The Louisiana State Board of Health has issued its *Almanac* for 1926, gay and attractive in a bright cover, and full of good advice on health subjects, public and personal. It is illustrated with good line drawings and neatly and attractively printed.

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An interesting and valuable report published in the *American Journal of Public Health* for March is that of the Committee on Mosquito Control presented to the Sanitary Engineering Section of the American Public Health Association at the fifty fourth annual meeting last October.

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The Williams & Wilkins Company, publishers of Baltimore, have announced the publication of the first series for 1924-25 of the *Dohme Memorial Lectures* given each year at Johns Hopkins University for the purpose of promoting the development of closer relationship between chemistry, pharmacy and medicine. The volume of lectures for 1924-25 is bound in two ways—cloth and paper, the latter form at a considerably lower price, suitable for the student. The lectures are by leading authorities, among them Dr. Stieglitz and Dr. Cushny.

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The Health Organization of the League of Nations has recently issued a valuable monograph on the Public Health Services in Australia, by Dr. J. H. L. Cumpston, director of general health of the Commonwealth of Australia, and Dr. Frank McCallum.

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Recent annual reports of interest are those of the Lenox Hill Hospital, New York City, the Boston City Hospital, and the New York State Veterinary College at Cornell University.

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Articles of interest in recent issues of the *World's Health* are How the Belgian Red Cross Met the Floods, by Dr. René Sand; The Russell Sage Foundation, by John M. Glenn; and Prevention of Accidents by Educational Methods, by Arthur Williams, general commercial manager of the New York Edison Company and president of the American Museum of Safety, all in the March number; and the seventh of the series of articles covering present day civil and humanitarian activities of the aeroplane, Aerial Medicine and Teaching, by H. C. Loeffler, of the relief division of the League of Red Cross Societies. in the April issue.

* * *

From a child's examination paper—The five senses are sneezing, sobbing, crying, yawning and coughing. By the sixth sense is meant an extra one which some folks have. This is snoring.—*Bulletin of the Chicago Municipal Tuberculosis Sanitarium.*

* * *

The leading article in the *Weekly Bulletin* for April 10th of the Department of Health of the City of New York is On Quacks and Quackery, which is concluded as follows: "The Department of Health is cognizant of the multiplicity of phases in the quackery problem, and seeks to achieve its elmination both through the exercise of police power and the spread of education. The Division of Illegal Medicine is charged with the detection, investigation, and facilitation in prosecution, by the District Attorneys' offices of quacks and illegal practitioners. The Bureau of Health Education, through popular lectures, literature, posters, and the radio, is carrying on the educational part of the war on quackery. All signs point to the achievement of desirable results, and it is not an over sanguine expectation to have New York City substantially freed of its quacks, within a short time."

* * *

Influenza, thus far this year, has by all accounts been very prevalent and a source of serious disability and absence from school work. The form of the disease, however, has not been generally virulent. This is best indicated by the mortality experience among the 17,000,000 industrial policy holders of the Metropolitan. While the death rates for both influenza and pneumonia have run higher, so far this year, than last year, the mortality figure for neither disease is unusually high as compared with other recent years.—*Statistical Bulletin, Metropolitan Life Insurance Company.*

* * *

The July issue of *Medical Life* will be devoted entirely to the History of Stomatology by Dr. A. J. Asgis, of New York. The issue will be profusely illustrated. There will also be a chapter by E. B. Hardisty on Stomatological Education in the United States in 1926.

* * *

A Vienna specialist has recently told us that our ears are growing larger and larger because of the din of life in cities; now the dean of the College of Dentistry of the University of Iowa tells us that, because of soft food and little chewing, we are becoming weak jawed. Dr. Breene said that the advantage of the Eskimos lies in their raw meat and other food difficult to chew, but he did not advocate literal imitation by the American public—only an endeavor through education to check the growing tendency toward the eating of soft foods.

American Medical Association

Seventy-seventh Annual Meeting, Dallas, Texas, April 19-23, 1926

(*Continued from page 629*)

The Scientific Proceedings

We present below abstracts of some of the more important papers read at the various section meetings. The publication of these abstracts will be continued in future issues of the JOURNAL.

SECTION ON DISEASES OF CHILDREN

CHAIRMAN, DR. CLIFFORD G. GRULEE, OF CHICAGO.
SECRETARY, DR. HUGH MC CULLOCH, OF ST. LOUIS.

The Breast Feeding Demonstration and the Practising Physician.—Dr. Frank Howard Richardson, of Brooklyn, said that hand in hand with the reawakening of interest in breast feeding had gone a new development in social medicine—the breast feeding demonstration. The two cardinal principles for universalizing breast feeding were completely emptying the breast, and completing the baby's feeding by giving him as much as he wants of a completing or complementary feeding. He said that the three essentials for conducting a breast feeding demonstration in a community were, 1, an interested and informed group of doctors; 2, the birth recording bureau of the health department; and 3, a body of nurses for visiting newly made mothers to instruct them in accordance with the doctors' orders, how to nurse their babies

It had been a very easy matter to get brilliant results as long as the demonstration was in force, wherever put on. But the results in the years following the termination of organized effort had been disappointing. The reason for this seemed to have been that the doctors as a body had not become acquainted with the details of the work, so that they would and could carry it out in their own practices. In an effort to overcome this, the Nassau County, Long Island, Demonstration had established a rule that no nurse should call upon any mother without obtaining the consent and the instructions of the doctor who had signed the birth certificate. This did away with much of the opposition encountered elsewhere. In the "daughter demonstrations" put on in various parts of New York State, a second step had been taken, in that in every case the demonstration was put on only in response to a definite invitation extended by the local unit of organized medicine.

There remained a third step to be taken, and the success of the breast feeding demonstration was assured. This step was now being urged, in the case of two of the largest cities that were considering initiating such demonstrations. It consisted of bringing before the members of the local medical organization the whole subject of breast feeding, as part of the graduate medical education movement now sweeping over the country. In this way the technic of breast feeding, its almost universal applicability in the hands of men who understood this technic, its possibilities, its advantages, as well as difficulties, all became matter of common knowledge to the men who must eventually carry on the work in their own community, if it was to be carried on at all. Such teaching must be clinical as well as didactic. Most important of all was the fact that the teaching was offered by the physicians' own organization, and not by any outside agency, no matter how well meaning. Doctors are usually eager for graduate education; but they want to initiate their own betterment, and they object to "being done good to!"

Dr. Richardson said that this teaching was now in contemplation by one of our largest cities, as a component part, possibly a preliminary part, of its projected breast feeding demonstration. This should mean even better figures for future years, than those obtained during the artificially stimulated years of the demonstration itself. In no other way could the results of such a demonstration become permanent.

Sporadic Meningococcus Meningitis.—The Sequelæ Following Specific Serum Therapy in Infancy and Early Childhood.—Dr. Stafford McLean and Dr. John P. Caffey, of New York, reported the followup observations in forty-four cases. The curative value of specific serum in the teratment of sporadic meningococcus meningitis in infancy and early childhood had been evident for many years, they said. Prior to the introduction of serum therapy the mortality of the disease in the first year of life approached one hundred per cent. Approximately fifty per cent. of the patients under one year of age treated by them with serum, recovered. In children between the ages of one to five years, eighty-five per cent. recovered. The later growth and development of these children with apparent complete recovery from their acute infection was of interest and of considerable importance. The authors had observed forty-four such cases (excepting two patients who died in the first year after discharge from hospital) over a period varying from one to ten years, and these formed the basis of their report.

In ninety-seven cases of meningococcus meningitis treated with serum at the Babies' Hospital in the ten year period from 1916 to 1926, recovery occurred in fifty-nine, or sixty-one per cent. These cases were all of the sporadic type since the disease had not appeared in epidemic form in New York City in the period covered in this study.

SUMMARY

1. Forty-four cases of sporadic meningococcus meningitis in patients from thirty-five days to four and a half years of age, treated with antimeningococcus serum were followed from one to ten years after treatment.

2. The following serious sequelæ developed in nine of the cases: deaf mutism in four cases, hydrocephalus in two cases, visual impairment in two cases, and mental deficiency in one case.

3. Five patients died during the period of observation.

4. Thirty were alive and normal in every respect at the time of writing.

5. In eleven cases in which serum was injected into the ventricles and cisterna magna because of obstruction of the subarachnoid space, eight patients made complete permanent recovery.

SECTION ON ORTHOPEDIC SURGERY

CHAIRMAN, DR. FRANK R. OBER, OF BOSTON.
SECRETARY, DR. JAMES A. O'REILLY, OF ST. LOUIS.

Some Diagnostic Problems Presented by the Hip in Early Life.—Dr. J. Albert Key, of St. Louis, Mo., said that many hip conditions were treated over long periods without a correct diagnosis. The results obtainable by the various diagnostic procedures were briefly discussed. He emphasized that various pathological conditions in the hip might result in similar clinical pictures. The fact that certain conditions tended to occur in definite age periods was to be considered as an aid in diagnosis.

Obscure cases were presented; 1, lesion of the acetabulum resembling Legg's disease; 2, lesion in the head of the femur of unknown origin; 3, obscure nonarticular arthritis; 4, pyogenic infection in the neck of the femur; 5, tuberculosis of the hip.

The Preoperative Differential Diagnosis of Bone Tumors.—Dr. Henry W. Meyerding, of Rochester, Minn., called attention to the necessity for a clear conception of the types of bone tumors and certain fundamental data, such as the history, clinical examination and properly prepared röntgenogram, in differentiating inflammation and benign and malignant bone tumors. The most important question to the physician, he said, was the distinction between the malignant and the benign. There were certain inflammatory conditions, due to trauma, syphilis or other infection, which must be excluded before the presence of a bone tumor could be determined.

The presence of a bone tumor, growing primarily in bone, having been determined differentiation between such tumors and metastatic lesions, must be considered. Both benign and malignant bone tumors may occur either locally or generally. In most cases of benign tumor there is usually a history of prolonged mild pain, sometimes with fracture or deformity, and the patients often work up to the time of consultation. On the other hand, the malignant tumors progress rapidly in extent and severity of symptoms. A history of previous illness, with pyrexia, pain, and so forth, suggesting an infection, or a history of syphilis, may be a guide to the nature of the lesion. The benign lesions such as osteofibrosa cystica, exostosis and osteoma occur for the most part in the young.

Multiple swellings in the ribs, sternum, clavicle and skull always suggest myeloma. Bending and thickening of the bone in the young suggest osteitis fibrosa cystica; soft, pulsating tumors in the region of the joints are usually giant cell tumors. Chondroma may show little or no local findings. Joint function is rarely impaired until late, in the cases of benign tumor. Periarticular and periosseous involvement is commonly seen in cases of malignant tumor and produces a fixed massive tumor of the soft tissues; the soft tissues are rarely involved in the benign lesions. On the other hand, inflammatory lesions may involve the soft tissues, but usually the severe pain, local heat, pyrexia and leukocytosis combined with the history of acute onset, will differentiate these from the malignant tumors.

Considerable stress was laid on the röntgenographic findings in differentiation, and the author believes that with the proper preparation and interpretation of röntgenograms almost all bone tumors may be correctly diagnosed. The knowledge gained from the röntgenogram as to the origin of the growth, the condition of the cortex and periosteum, the relation of the tumor to the epiphysis and diaphysis, and its osteolytic and osteoplastic character has an important bearing on the differential diagnosis. Such interpretation demands expert opinion, which the average physician seldom has an opportunity to acquire on account of the rarity of these tumors. The preoperative laboratory tests have been of little value, with the exception of the finding of Bence-Jones protein in cases of multiple myeloma, and the demonstration of the severe secondary anemia which accompanies rapidly growing malignant tumors. The röntgenogram provides the earliest evidence of pulmonary metastasis, and the author advises röntgenograms of the lungs in all cases of suspected malignant disease.

The differential diagnosis of bone tumors demands cooperation among the physician, surgeon and röntgenologist when differences of opinion arise. The value of the pathologic examination, both macroscopically and microscopically, should not be forgotten inasmuch as the fate of the extremity may depend on it.

SECTION ON PRACTICE OF MEDICINE

CHAIRMAN, DR. E. S. KILGORE, OF SAN FRANCISCO.
SECRETARY, DR. BRYCE W. FONTAINE, OF MEMPHIS.

Etiology and Treatment of Pernicious Anemia.—Dr. Lewellys F. Barker, of Baltimore, said that though it was true that the cause of pernicious anemia was unknown and that no cure had yet been found for the disease, these statements if unqualified would be very misleading. Much progress had been made toward gaining an understanding of what the causes of the disease must be and of what the links in the pathogenetic chain most probably consisted.

A careful consideration of the large number of facts available now regarding the disease gives certain clues to etiology. Pernicious anemia is peculiar in its incidence and distribution, in the time of life at which it appears, in the form of blood destruction that occurs, in the peculiar form of bone marrow response to the anemia during regeneration, in the frequent association of the anemia with achylia gastrica, with combined sclerosis of the spinal cord, with certain endocrine features, and with a certain type of bodily configuration. It is also remarkable because of its periodical course with tendency to spontaneous remissions and exacerbations. Finally, it is a fatal disease despite the most diligent and skilful treatment.

Many hypotheses of etiology have been advanced. At present the evidence favors an hereditary predisposition as the main cause though various influences

in the environment, particularly poisonings of various sorts are to be regarded as accessory, releasing or provocative factors.

Though physicians cannot cure the disease therapy is far from being unrewarded. By means of rest, the administration of dilute hydrochloric acid and of arsenical preparations, blood transfusions, and other measures, the patient's condition can often be greatly improved and frequently remissions of longer or shorter duration are thus obtained.

The fact that the disease remains latent until middle or later life in most persons predisposed to it, gives rise to the hope that this latency may, in many instances, be prolonged by special attention to hygienic measures in members of families that are susceptible. Thus early recognition of achylia gastrica, of slight paresthesias in the fingers and toes, of a tendency to sore mouth and of certain changes in the blood before anemia actually develops, may permit of the institution of a régime which will help to keep the malady from manifestation for a longer time. If it is true that a hereditary factor is the main cause, intermarriage of members of families in which the disease is known to occur should obviously be discouraged.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

CHAIRMAN, DR. DALLAS B. PHEMISTER, OF CHICAGO.
SECRETARY, DR. J. TATE MASON, OF SEATTLE.

The Surgical Treatment of Cleft Palate.—Dr. George V. I. Brown, of Milwaukee, Wisconsin, described as follows a new method for the surgical treatment of cleft palate which he said was primarily a reconstructive application of parts of many old operative procedures revised to form what was in effect a new operation.

The Von Langenbeck-Warren mucoperiosteal flap operations have rendered great service in the correction of cleft palate during many years as applied by surgeons in this and other countries. Nevertheless, there are certain important objections to operations of this type which long experience has taught us that it would be greatly advantageous to overcome.

According to the new procedure, bone is included in the tissue flaps. The plentiful blood supply from the intranasal vessels is not interfered with, and complete union is favored to that extent. The attachments of the levator and tensor palati muscles with the fibrous tissue at the border of the hard palate are not dissected free, therefore scar contraction and stiffening, as well as shortening of the velum, are correspondingly avoided. There is no compression of the maxillæ, therefore, nasal and oral development are not disturbed. The speech results seem to be better because the anatomical relation of nasal and palatal structures are more correct, and speech training correspondingly less indispensable.

Certain elementary principles pertaining to the treatment of harelip are indispensable to a proper consideration of the surgical character of cleft palate because upon the manner in which the lip is treated will depend in a large measure the character of the palate fissure, even though nothing be done to the palate directly at the time. In other words, the operation to close the lip defect should influence the future operative conditions favorably by making each step of the necessary correction easier and not more difficult as so often occurs.

The association of malformations and malpositions of the premaxilla, the alar cartilages, the nasal septum, the vestibulæ, and other cartilaginous nasal structures in cases of third degree harelip and cleft palate require that they be given immediate corrective attention when the lip fissure is closed. This should be done with the least possible forcible replacement of the premaxilla beyond the actual necessary requirements to permit satisfactory approximation of the lip borders. No compression of the sides of the palate should be applied to force the fissure borders into contact, and even the fixation of the premaxilla by sutures after forcing it into position should be avoided if possible.

Traumatic injury of this character may injure or destroy developing teeth. There is abundant evidence of the permanent disadvantages to health, to the upper dental arch, facial appearance and other undesirable conditions due to forcible narrowing of the bony walls of the palate by immediate compression of the alveolar outline of the mouth.

The order of procedure that I have followed for many years is to operate for closure of harelip with simultaneous reconstruction of the deformed nose in such manner as to assure nasal breathing, improve the appearance of the alar outline, straighten the lower border of the nasal septum, and give correct alignment of the lip muscles, as soon after birth as the condition of the child and other governing factors will permit. At six to eight or nine months old the first step palate operation is performed and one year later the final operation makes the parts complete before wrong speech habits have become established.

The change now recommended is that instead of closing the anterior part of the palate fissure at the first step operation as formerly, I reverse the order and close the velum and posterior part of the hard palate at the first step. Instead of a mucoperiosteal flap operation according to a modification of the Von Langenbeck method which I have previously employed I now include bone segments with the flaps as in the Ferguson operation, but without the serious objections to that method that it seemed advisable to overcome.

The ideal cleft palate operation then must be one that will not deform the mouth, but will give the utmost blood nourishment to the flaps, the least possible shortening of the velum, a minimum of velar rigidity from scar formation, and a maximum rigidity at the posterior border of the hard palate to permit better function of its attached muscles. The bone flap operation is not favorable for the closure of the velum in which the bone is not involved. In such cases the Von Langenbeck-Warren types of procedure are indicated.

In performing the bone flap operation according to the new plan, incisions are made on both sides of the palate in anteroposterior direction along the line of and just inside the alveolar ridge in edentulous infant cases and if teeth have been erupted, just sufficiently away from the linguogingival border to prevent injury to tooth roots. A chisel is forced directly through the external hard surface of the fragmentary

palatal bone structures into the cancellous structure and then inclined toward the palatal fissure border. The palatal bone between the incision and the fissure on each side is fractured, the blood controlled by gauze packing and a loop suture of double silk worm gut is passed completely around the divided segments on both sides and when drawn tight the fissure border is brought in contact without difficulty throughout the entire length of the velum well up toward the center of the hard palate. The borders are freshened, but the entire part of the palate is not closed at this time.

One year later a mucoperiosteal operation is done to complete the fissure closure. The advantages of this method are that there is less danger of loss of tissue and imperfect result along the central line because of the unrestricted blood supply and the palate closure is complete before speech habits have become fixed. There is as nearly as practicable a full length velum which is not stiffened by scar contraction and a posterior border of the palatal bones that is favorable to natural physiological function of the attached muscles. No serious injury is done to the alveolar outline, or to the premaxilla, or the erupting teeth contained therein. Therefore the nares have not been unduly contracted and natural respiratory activity will assist in improving the muscle outline.

There will be a better appearance to the lip because of the eruption of teeth in nearly or quite normal position and the activity of the palatal and pharyngeal muscles cooperating with labial and facial muscles will assist development that must favor improving progress toward more symmetrical facial and labial outlines, and all of the foregoing advantages naturally lend themselves to the acquirement of better speech.

SECTION ON OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY

CHAIRMAN, DR. GEORGE GRAY WARD, OF NEW YORK.
SECRETARY, DR. CARL H. DAVIS, OF MILWAUKEE.

The Toxemias of Pregnancy.—Dr. John Osborn Polak, of Brooklyn, N. Y., presented a summary of the present status of the toxemias of pregnancy. The conditions considered in the discussion were: hyperemesis, preeclamptic toxemias, and eclampsia.

Hyperemesis, Dr. Polak said, was the result of a vicious cycle beginning with a carbohydrate deficiency and resulting in starvation and dehydration which produced the final pathology in liver and kidneys. The three underlying factors were: Metabolism, with its carbohydrate deficiency; neurotic hypersensitiveness; and intestinal intoxication with its traditional constipation. The amount of fluid lost by vomiting varied from five hundred to fifteen hundred c. c. per diem. Continuous vomiting produced dehydration. Starvation and rapid emaciation emptied the vessels, lowered blood pressure, gradually increased rapidity of the pulse, diminished the urinary output, increased concentration of body fluids, and lowered the leucocyte count.

The principles of treatment included 1, isolation; 2, exhibition of large quantities of fluid to produce diuresis given by os, by hypodermoclysis, and by intravenous infusion; 3, small blood transfusions with an equal amount of saline solution; 4, in the event of the methods mentioned above failing, pregnancy should be interrupted.

Preeclamptic toxemias were not due to any specialized toxin or toxins, but rather to the overload suddenly placed upon the maternal organism. There were two types, namely, nephritic with a preceding history of kidney lesion, and hepatic (fulminating explosive) with no preceding history of renal disease. Studies in blood chemistry and the basal metabolism rate had little or no clinical significance—*until after delivery.*

In the hepatic type, without a history of a previous lesion, the condition was commonly of sudden development. There was a sudden rise in blood pressure, albuminuria appeared after the pressure went up, and there might be rapid gain in weight followed by edema, headache, and epigastric pain, but the eyes usually showed nothing.

In the nephritic type, the woman began her pregnancy with a blood pressure of 140 or more, a trace of albumin in the urine, and occasional hyaline casts. The phthalein test showed glomerular changes, while the concentration test showed deficient reserve. Headache, edema, eye symptoms, retinal and fundal changes, were present.

The earliest clinical evidences of toxemia were: Rise in the systolic blood pressure, appearance of albumin in urine, diminished urinary output, an increase in body weight, indicanuria, edema of face, hands and feet, epigastric distress (heartburn), frontal headache, and retinal changes.

The treatment of the preeclamptic state and of eclampsia is essentially medical. The treatment of latter month toxemias might be summed up as follows: 1, Prevention; 2, control of the convulsions and coma, and 3, the management of labor in the presence of convulsions when labor has started.

Preventive treatment: The preeclamptic patient should be in bed at rest, her nitrogenous intake limited, and her emunctories stimulated to produce diuresis, diaphoresis and bowel evacuation. In the case of edema the fluid intake must be limited. When the foregoing procedures do not result in lowered blood pressure and increased urinary output, with diminished albumin and improvement in general well being, the pregnancy should be interrupted.

The toxic patient was a poor surgical risk because she bore the anesthetic badly, was liable to shock, had a poor resistance to infection, and could not withstand trauma.

In the presence of convulsions the treatment was never surgical. The indications were: control convulsion with morphine and chloral; protect woman from injury and aspiration of mucus; remove the toxins by bleeding; support the heart; increase elimination and meet glycogen deficiency with intravenous glucose; relieve cerebral congestion with magnesium sulphate. Only after the toxemia and convulsions were controlled should the consideration of delivery be taken up.

The induction of labor was indicated when the patient had recovered from the toxemia—for recurrence had frequently been noted in the same pregnancy. The method of delivery to be employed must be determined by the obstertical factors present in each case.

SECTION ON OPHTHALMOLOGY

CHAIRMAN, DR. ARNOLD KNAPP, OF NEW YORK.
SECRETARY, DR. WILLIAM C. FENNOFF, OF DENVER.

Safeguards in Cataract Expression.—Dr. John Green, of St. Louis, Mo., proposed the following routine in an endeavor to safeguard every step in cataract expression (after capsulotomy):

1. Complete subconjunctival iridectomy four to six weeks prior to the expression.

2. The formation (prior to section) of a trapezoidal conjunctival flap to cover the entire region of the section.

3. The introduction (prior to section) of a Verhoeff suture through the episclera and midpoint of the upper edge of the flap.

4. Downward traction on the four threads of this suture during the formation of the section—to prevent accidental severance of the sutures or base of the flap.

5. Irrigation, if necessary, after replacement and loose suturing of the flap.

6. The insertion of additional conjunctival sutures in each upper angle of the flap.

Loop extraction necessitated by vitreous loss prior to delivery of the lens could be carried out, he said, with ease and safety. Replacement of the angles of the coloboma, wound toilet, etc., could be carried out leisurely and with precision even after vitreous loss. This combination of methods seemed to offer safeguards against infection, serious loss of vitreous, severe iritis and iris prolapse. Visual results in seventy-five cases were given.

Sympathetic Uveitis Caused by the Virus of Herpes Simplex.—Dr. S. R. Gifford, of Omaha, Neb., said that experimental work was undertaken to check up on a report of von Szily who was able to reproduce the clinical picture of sympathetic ophthalmia in rabbits, using material which was obtained from herpetic lesions of the human cornea. This virus was chosen because of its well known property of extension in nervous tissue. Material was obtained from herpetic lesions of the human cornea, which after preliminary inoculation on a rabbit's cornea to obtain a pure culture, was placed in a pouch made between the ciliary body and the sclera of another rabbit. A severe uveitis occurred in the first eye and after about two weeks, when this reaction was beginning to subside, about ten per cent. of the animals developed an iridocyclitis of the second eye. Von Szily's technic was carried out in a large number of rabbits. Besides this inoculations were made directly into the chiasm. Besides pathological examinations of the second eye as made by von Szily, inoculations were carried out with materials from the second eye and from points along the nerves and chiasm to determine the presence or absence of herpetic virus in these locations.

In conclusion, the author stated that 1, the present work confirmed the finding of von Szily that the virus of herpes simplex, when inoculated in a ciliary pouch, will produce in a certain percentage of rabbits a uveitis of the second eye resembling, clinically and histologically, the picture of human sympathetic ophthalmia; 2, it was also possible to produce uveitis of both eyes by injection of the virus in the region of the chiasm; 3, the active virus could be demonstrated in the second eye by positive corneal inoculations and in one case uveitis of both eyes was produced by inoculation from the second eye to a ciliary pouch. A further positive corneal inoculation from the second eye of this animal was obtained, showing transmission of the virus through three generations from the first sympathizing eye; 4, herpes cornea of the opposite eye occurred in six per cent. of the animals inoculated in the ciliary pouch; 5, sections indicated extension of the process by way of the nerves and chiasm to the other eye, and this was confirmed by positive inoculations from points along this route; 6, inoculations from a human case of sympathetic ophthalmia were negative; and 7, the possibility of a filtrable with neurotropic properties similar to those of the herpes virus as the cause of sympathetic ophthalmia was given some support by this work.

The Ophthalmic Year Book, Why and How.—Dr. William H. Crisp, of Denver, Col., said that the *Ophthalmic Year Book,* founded by Dr. Jackson in 1903, more or less along the lines of Nagel's *Jahresbericht* in Germany, was planned to enable ophthalmologists to keep in touch with the periodical literature of their specialty all over the world. Its preparation presents special literary and linguistic difficulties. A thoroughly organized and up to date abstract department to cover the ophthalmic periodicals of the various civilized countries would be in some respects more attractive to the average practitioner, but would be much less valuable for purposes of reference than is the *Ophthalmic Year Book.* The year book has always cost more than was charged for it. To be secure of permanency, it should either pay its way or be supported out of an endowment fund provided privately or by cooperation between scientific organizations.

Closure of the Retinal Vessels: Important Aspects in Diagnosis and Management That May Be Overlooked.—Dr. L. Herbert Lanier, of Texarkana, Texas, said that the cause of closure of the central retinal vessels is not ascertainable from the ophthalmoscopic pictures, but an investigation of the systemic condition may lead to it. One should remember that competent pathologists have made a microscopic examination in very few cases of either central artery or central vein closure, and that sometimes the underlying cause is undiscoverable, as cases have been cited in which closure of the central artery occurred in children not over thirteen, in whom the most careful and exhaustive examination revealed no cause of the closure. We know that, as a rule, a thorough examination will reveal evidence of vascular disease in closure of the retinal vessels, but there are certain exceptional cases arising from time to time to challenge the master research workers in ophthalmology to determine correctly, their etiology. Now, the point that I wish to stress, is that narrowing of the retinal arteries is seemingly possible through contraction of the walls, induced by sufficient irritation to close its lumen, and that such irritation may be due to drugs or other artificial means. It may occur independently of local arteritis or any evidence of arteriosclerosis or any other type of vascular degeneration.

Abstracts from Current Literature

ARTHRITIS

Arthritis Deformans.—L. S. Ashcroft, L. Cunningham, T. P. McMurray and H. S. Pemberton (*British Medical Journal,* July 4, 1925) made a routine study of over fifty cases of arthritis deformans. By opening the joints in a large proportion of the cases they were enabled to recover an organism, which was found to be identical culturally and biochemically in every case. The organism found is different from every other organism described heretofore. It was recovered from the synovial fluid in only one case; in all others it was found either in the membrane or in the articular bone. Experimentally, only rabbits were injected with this organism intravenously, but no resulting lesions were found in the animals. Septic foci, the urine, feces, blood, or fasting gastric contents were all found negative.

The gastic secretion, the basal metabolism, the acid base ratio, the renal and hepatic efficiency, and glucose tolerance tests were all part of routine examinations, and the only outstanding features were the following: achlorhydria or hypochlorhydria in a large proportion of the cases, a practically universal diminution of carbohydrate tolerance, the relative absence of acidosis, renal or liver defects, or changes in the metabolic rate.

The only routine treatment employed was a large amount of 0.4 per cent. hydrochloric acid and a carbohydrate free diet, extending over a period of months. Improvement, as shown first by a diminution of the pain and then by an increase of mobility, was observed in practically every case, even without the elimination of focal sepsis.

Rheumatoid Arthritis.—Humphrey Rolleston (*Canadian Medical Association Journal,* September, 1925) emphasizes the importance of dealing with focal infections prior to the inauguration of any other form of treatment. Then autogenous vaccines, not stock, should be employed. Sensitized vaccines have their advocates, and mixed vaccines may be necessary. Vaccine therapy is often combined with, and said to be helped by, diathermy and ultraviolet radiation. He discusses the long list of drugs used for intestinal autointoxication, the things that have been given to restore an endocrine balance, the prevention of deformities, the way in which heliotherapy, ultraviolet radiation, massage, heat, and hydrotherapy produce good effects, and the protein shock therapy. Finally he propounds the following questions: Is rheumatoid arthritis always infective in origin? What is the relation of tuberculosis elsewhere to chronic arthritis? What share do constitution and disorders of metabolism take in its causation? Are the arthritic and endocrine disorders both due to infection, or does metabolic disorder sometimes precede and dispose to infective arthritis? Treatment by endocrine therapy, dietitic modifications, and protein shock?

Some Features of the Rheumatic Infection.—The records of 141 cases of rheumatic infection are analyzed by Mary Bertram (*British Medical Journal,* March 14, 1925). The patients were examined one to eleven years after the first attack. No case occurred during infancy; sixty per cent. were from six to ten years of age at the onset of rheumatism. Girls were affected more frequently than boys. The disproportion was most marked in the case of chorea (three to one). Arthritis was most prevalent in October and November (thirty-two per cent.), chorea in February and November (thirty-two per cent.). As regards the lesions, seventy-six per cent. of the patients had carditis, seventy-three per cent. arthritis, forty-seven per cent. chorea, twenty-eight per cent. tonsillitis, seven per cent subcutaneous nodules, six per cent. skin lesions. With regard to cardiac involvement, six per cent. had marked cardiac disability, forty-one per cent. slight disability, nine per cent. carditis without disability, twenty-four per cent. had no cardiac involvement. Of the total cases twenty per cent. of the patients died; twenty-five per cent. of the fatalities were within three months, fifty-seven per cent within one year, seventy-five per cent within two years from the onset of the rheumatism.

Pericarditis and subcutaneous nodules were the lesions indicating most severe infection. Early hospital treatment diminished the incidence and severity of carditis. Treatment was more effective in preventing carditis in arthritis than in chorea. Cases of chorea treated by sodium salicylate had a lower incidence of subsequent carditis than cases treated by arsenic, sedatives, or rest without drugs.

Arthritis Deformans.—Alonzo deG. Smith and Samuel J. Ferber (*Archives of Pediatrics,* January, 1926) present an interesting, rapid survey of arthritis deformans. Included is a case from the Vanderbilt Clinic of a girl, eleven years old, together with a differential diagnosis, recommended treatment and bibliography.

Polyarthritis. Report of a Case in an Infant Six Days Old.—In a case of polyarthritis in an infant six days old (*American Journal of Diseases of Children,* February, 1926) L. F. Richdorf and W. H. Griffith conclude that the presence of a similar streptococcus viridans in the mother's blood and the baby's joint fluid, and the absence of local signs indicating a portal of entry after contact or other infection, point toward an intrauterine infection of the infant through the placenta by the organisms circulating in the mother's blood.

Acute Pyogenic Arthritis of the Hip Joint in Infancy and in Childhood.—Morris B. Cooperman (*American Journal of Diseases of Children,* February, 1926) finds that acute gonococcus infections of the hip joint in the newborn are characterized clinically by early, spontaneous dislocations. Immobilization in plaster casts and diathermy are of definite curative value in preventing destruction and relieving the inflammatory reactions. Reduction of the dislocation should not be attempted during the acute stage. Vaccines have proved valueless. Streptococcus and staphylococcus infections of the hip joint in older children are characterized by severe constitutional and local reactions. Intravenous thearapy has proved of little value.

Report Upon Ninety-Two Cases of Rheumatic Disease in Childhood.—Martin O. Raven (*Lancet,* October 3, 1925) divides his report on ninety-two cases of rheumatism, carditis, and chorea into two parts: a, Observations in the wards; b, examination of discharged cases. Experience points to the following three criteria as furnishing the most useful indications of progress or the reverse: 1, Quiescence or recrudescence of symptoms; 2, constitutional signs; and 3, cardiac physical signs.

The recrudescence of symptoms may be summarized as follows: a. Acute rheumatism occurred only once. b. Chorea, once established, has recurred in three cases only—in all of them as a result of a definite emotional upset. In two other cases the movements never disappeared entirely; they appear to be more difficult to check in girls of ample physical proportions. c. Tonsillitis is more common and is troublesome, and the cases are quickly isolated, owing to their being very infectious. d. Simple pyrexia occurs occasionally and, as it yields to salicylates, in most cases, is probably rheumatic; twice it was accompanied by fresh carditis. e. Scarlet fever occurred in one case and was followed by fairly severe scarlatinal rheumatism without further carditis.

Constitutional signs are noted as follows: a. Pallor seldom persists; if it does so it is a bad sign, but a "good color" is often a sign that flatters. b. Weight goes up in all but rapidly deteriorating cases; only a very rapid gain in weight can be taken as a really good sign by itself. c. The nearer the temperature tracing approaches a straight line, the better a case appears to be doing. d. Heart failure occurs only in the severest cases; a heart may be able to respond to a considerable degree of effort while being slowly and progressively infected. Response to effort is therefore no criterion. e. Tachycardia is especially due to the rheumatic poison, quite apart from gross cardiac lesions; in such cases there is little or no respiratory variation in the pulse rate. Correct charting of the pulse rate is very important, since the visit of the doctor may cause a temporary tachycardia. There is no effect of treatment so definite as the change after a longer or shorter period of time, from this rapid excitable pulse rate to one of a more deliberate and uneven rhythm, the first sign of improvement being a noticeable slowing of the rate on slow expiration after a deep breath; as recovery proceeds the sign be-

come more and more marked. Digitalis can sometimes slow the heart rate, but this effect is soon lost.

Among the physical signs of the heart is dilatation of the heart borders, which should be regarded, when following an attack of rheumatism, as evidence of an infected myocardium. It is often accompanied by a systolic murmur which sufficient rest in bed abolishes. The mitral diastolic bruits, described by Cheadle, are very common and are of utmost importance in prognosis, especially as regards mitral stenosis and ultimately auricular fibrillation. The difficult question of valvular infection seems to be more safely dealt with by rest in bed until constant auscultatory signs and a quiet pulse rate show the endocarditis to have been arrested. Aortic murmurs do not appear to undergo any favorable modification.

In the examination of discharged cases the following variable factors were encountered: 1. Number of attacks of rheumatism before beginning treatment. 2. Presence or absence and severity of carditis. 3. Mode of onset of disease—acute, insidious, or choreic. 4. Home conditions of the patient, especially after returning from treatment. (Dampness should be avoided.) 5. Length of time under treatment. 6. Performance or otherwise of tonsillectomy as part of the treatment.

There are so many variations in the conditions to which these patients are exposed, that in order to investigate fairly the results of any type of treatment for rheumatism in childhood, it would be desirable to select a series of cases as uniform as possible.

From reëxamination of these discharge cases one cannot fail to learn that the most accurate prognostic signs are to be found in repeated examinations of the heart; quiescence of symptoms is deceptive, and we have learned that even three years must elapse before it can be assumed that a favorable case is likely to be free from recrudescence. Constitutional signs are also unreliable. If unfavorably developing physical signs can be arrested, as the period of life approaches at which the heart is less susceptible to infection, the chances of an active and useful life are increased.

GENITOURINARY DISORDERS

Stricture of the Ureter.—W. S. Pugh (*Annals of Surgery,* April, 1925) asserts that stricture of the ureter is a definite pathological entity, occurring mostly between twenty and forty years of age. It constitutes about ten per cent. of the upper urinary lesions. It is not purely a focal infection, but due to extension of disease by continuity as well. It is more commonly a gonorrheal process than is generally supposed and its pathology is somewhat similar to urethral lesions. The symptoms are largely local, the diagnosis may be made certain chiefly by history and x ray, aided by ureteral bougie. The treatment is limited to dilatation.

X Ray Kinks of Ureters That Are Not Kinks.—L. G. Cole (*American Journal of Surgery,* May, 1925) warns against interpreting certain x ray findings as definite evidence of kinks, angulations or strictures associated with angulations, in the ureter. The ureter is a flexible tube fixed at the lower end and movable at the upper in proportion to the mobility of the kidney. In both normal and abnormal mobility as seen in the anteroposterior directions, the ureter is relatively straight with gentle curves only; but when observed in the opposite plane these curves are exaggerated, particularly as the ureter comes out of the pelvis and as it crosses the psoas muscle and dips backward to the kidney. In patients with certain physique and with the kidney high these curves are gentle, but in others these curves are quite marked. Thus what are often reported as ureter kinks are in fact but projections of gradual curves.

Papilloma of Ureter and Kidney.—R. V. Day, F. D. Fairchild and H. W. Martin (*Surgery, Gynecology and Obstetrics,* April, 1925) assert that, 1. when a patient has hematuria, or any other symptom likely to be of renal origin, his physician should not be content until he discovers: first, the primary source of the bleeding and, second, the pathological nature and extent of the lesion behind it, if it is reasonably possible by an adequate urological examination.

2. Thorough urological examination may not result in an absolutely accurate pathological diagnosis, but in a general way it does tell the surgeon what to do and notifies him to look for the unusual and unexpected, as well as the everyday pathological findings.

3. Primary nephroureterectomy offers the patient the maximum chance of complete cure, and a two stage nephrectomy and ureterectomy should not be necessary in an increasingly larger percentage of cases if a few simple rules are observed.

4. In the removal of a neoplastic kidney or if there is suspicion of any kind of tumor, splitting and examination of the kidney should be made before closure.

Back Pain of Urological Origin.—L. Michel (*American Journal of Surgery,* August, 1925) states that changes in the position of the kidney, its susceptibility to infection, the common incidence of calculus and silent stone, and the possibility of symptoms being absent, all impress the importance of urologic investigation for obscure back pains. The prostate should also be investigated for infection and carcinoma. Metastases in the spine often occur early in prostatic neoplasm. The accuracy of the cystoscope and roentgenography should be utilized.

Partial Resection of the Kidney.—E. S. Judd (*Annals of Surgery,* September, 1925) finds that it is entirely feasible to perform resection even in cases of solitary kidney, and it should be done whenever a more complete removal of the infection can be accomplished. Resection of double kidney is practical, provided the disease is definitely confined to one segment. Just as in cases of solitary kidney the resection can undoubtedly be made whether the kidney is double or single. For the present, one should be contented with nephrectomy in most cases of tuberculosis. Even in what appears to be very early cases, the infection usually involves more of the renal tissue than can be demonstrated except by microscopic examination. Before resecting renal tissue, we must take into consideration the amount of renal hypertrophy and atrophy, so that we may save a segment of the kidney that will be of some service to the patient.

Etiology and Treatment of Cystitis.—H. W. B. Cairns (*British Journal of Surgery,* July, 1925) divides cases of cystitis into two main groups: Those which clear up quickly either spontaneously or after simple forms of treatment (resolving cystitis); and those which become chronic (progressive cystitis).

The paths of bacterial infection in resolving cystitis are not completely understood. In some cases the infection undoubtedly comes from the kidney, in others possibly from the prostate. There remain, however, many cases in which it is impossible to determine the source of the infection.

Chronicity in cystitis is due to a number of conditions. In rare cases it is due to a solitary ulcer of the bladder, a condition of unknown etiology. In most cases it is due either to persistent infection from the kidney or to the presence of retained (or residual) urine in the bladder.

A persistent focus of infection in the renal pelvis may give no clinical sign. Evidence obtained by cystoscopy is frequently of great value in the detection of such foci. If the lesion of the renal pelvis is treated efficiently, the cystitis will clear up at once.

Any variety of retention of urine may produce progressive cystitis. The successful treatment of retention cystitis depends entirely on the establishment of complete drainage of the bladder either by natural or artificial means. Bladder irrigations are of great service in this variety of cystitis.

When cystitis occurs in a case of unrelieved acute retention there is grave danger that it will be followed by ascending pyelonephritis, a condition which is usually fatal. When it is realized that all cases of retention of urine require immediate and complete relief, then only will ascending pyelonephritis, the occurrence of which is a grave reflection on the teachings and practice of surgeons of today, cease to be common. Drainage of the distended bladder is an operation of greater emergency than that of drainage of a pelvic abscess.

Finally, cystitis, though a distinct clinical entity, is usually secondary to some other lesion of the urinary tract. It should not be treated empirically; the exciting and predisposing causes should be sought by a thorough investigation of the whole of the urinary tract. When these causes have been dealt with, the inflammation of the bladder will subside of its own accord.

Persistent Pyuria.—J. A. Lazarus (*American Journal of Surgery,* August, 1925) discusses this complication as a sequela of prostatectomy, and concludes from his cases that:

1. The prostate gland is usually not removed in its entirety at prostatectomy.

2. The residual prostatic tissue and seminal vesicles frequently become infected during a prostatectomy and perpetuate a pyuria. This should make it imperative, in searching for a focus responsible for a persistent pyuria, to massage the prostatic region and vesicles for pus.

3. The residual prostatic tissue is often the seat of recurrent tumor formation with infection.

4. Pyuria can be due to the presence of a bladder tumor easily overlooked at the time of prostatectomy.

5. Infected diverticula constitute a common cause of pyuria in cases of hypertrophy of the prostate. Cystograms should be made in all cases of persistent pyuria following prostatectomy.

6. The commonest cause of pyuria in prostatectomized patients is the presence of infection in the upper urinary tract. This should be investigated with careful postoperative cystoscopic examination of the kidneys.

Condylomas of the Penis Simulating Cancer.—A. Buschke and Ludwig Loewenstein (*Klinische Wochenscrift,* September 3, 1925), as a result of their histological investigations, come to the conclusion that these cases show an excessive growth of condylomata acuminata, which present no atypical cells and no definite destructive cancerous growth. Their partially infiltrating growth is the only symptom, which, from a pathological viewpoint, would entitle them to be considered as carcinomas. Inasmuch as all the other histological and clinical signs bespeak a condylomatous nature, they should not be taken for carcinomas. The fact that infiltrating growth with pointed condylomata has not been observed in females, suggests the possibility that certain anatomical conditions in the male genitals are responsible for their development. In the first place, it should be mentioned that in every case observed there was a congenital phimosis, which at least exerts a permanent irritation upon the underlying tissues and, as a result of the continuous retention of smegma, incites the existing vegetations to this extraordinary growth. Furthermore, the contracted prepuce, which limits to a certain extent the extension of the papillomatous growths upward and laterally, exerts a mechanical cause by pressure from without and favors of the growth of the epithelium into the depths. At any rate, the continuous inflammatory irritation, which expresses itself histologically in the enormous infiltrations, is certainly sufficient to cause proliferation of the epithelium, and if this is continued for years it results in forms of growth that closely resemble carcinoma, without partaking of their character.

Inasmuch as conservative treatment failed because of the profound anatomical changes, the authors felt justified in amputating the penis in a number of cases. More recently, if the benign character of the growth was proved, the use of röntgen irradiation and radium was tried, especially since the latter is very useful in cases of condylomata acuminata.

Urethral Stricture.—A. Hyman (*American Journal of Surgery,* June, 1925) maintains that practically all urethral strictures can be dilated successfully by means of filiforms with Philips bougies or catheters. When these instruments cannot be passed it is advisable to resort to suprapubic methods to relieve the distended bladder, rather than operating upon a badly traumatized urethra. The measures briefly outlined below have worked out so admirably in the order mentioned, that they should be the methods of choice in the treatment of uncomplicated urethral stricture.

I. Dilatation with Philips filiforms and catheters. Many of the patients applying for relief have already been traumatized by ineffectual attempts to pass instruments. Further instrumentation should therefore be avoided for six to twelve hours, in the meanwhile administering hot sitz baths and opiates. If there is complete retention and relief is urgent, attempts to pass filiforms should be carried out as follows:

1. Anesthetize urethra with two per cent. novocaine.

2. Distend urethra with sterile albolene. This helps to iron out all urethral folds on which filiforms are likely to impinge.

3. Introduce four to six Philips filiforms and manipulate until one passes the stricture, this may require considerable time and patience but by this method most strictures can be passed.

4. When a filiform is in place, half the battle is won. A bougie or, preferably, Philips catheter is screwed on and passed into the bladder. Every twenty-four to forty-eight hours a larger size catheter can be inserted, using the filiform as a guide without removing it from the urethra. If the stricture is so tight as to permit the passage of only a filiform it should be strapped in place for one to two days, after which it will be found easier to introduce a catheter or bougie screwed on to the filiform.

The average stricture by this method can be dilated up to twenty to twenty-four F. within a week, after which ambulant treatment is carried on.

Should the above outlined method prove unsuccessful, the following procedures are to be carried out:

1. Suprapubic puncture with Potain suction apparatus. The distended bladder is aspirated suprapubically by means of a Potain suction apparatus. Some cases have been aspirated three to five times. This allows the edema to subside, so that filiforms may be tried again at the end of two to three days. The procedure gives the traumatized urethra a rest, and danger of contaminating the peritoneal cavity during puncture is very slight.

2. Suprapubic buttonhole drainage, with or without retrograde catheterization. Under local anesthesia, the bladder is exposed suprapubically by a small incision and a large trocar and cannula are inserted. The trocar is removed and a catheter is introduced through the cannula into the bladder. This is a simple procedure and takes but a few moments, and cannot be compared with the difficulties encountered in attempting an external urethrotomy without a guide. The catheter is left in place four to seven days, making no attempts to instrument the urethra in the meanwhile. As a rule, at the end of a week, a number ten to fifteen F. bougie may be passed at the first attempt without any difficulty.

3. Retrograde dilatation.—Should it not be possible to introduce a bougie or filiform, after the urethra has been given a rest from instrumentation, a cystoscope is inserted through the suprapubic opening, the internal sphincter orifice is located and catheterized with a ureter catheter which is allowed to remain in place three to four days. Retrograde passage of bougies or catheters will occasionally succeed when other methods fail. Often when bougies cannot be passed in the normal way, ureter catheters may be introduced retrograde without difficulty.

Control of Venereal Disease.—H. W. Bayly (*International Journal of Medicine and Surgery,* September, 1925) reports as follows upon the evidence of witnesses called before the Trevethin Committee of Inquiry regarding the value of immediate self disinfection as a method of preventing venereal disease.

Three questions were submitted, viz: 1. Have you any evidence of the effect of the application of such disinfectants immediately after exposure and after the lapse of two, four, six, eight, ten hours or longer? 2. Does the application of such disinfectants either immediately after exposure or at a later time require particular skill? Can it be carried out by a man, or a woman, of average intelligence in a state of sobriety? 3. Have you any evidence to show that a large proportion of persons who contract venereal disease are infected while under the influence of alcohol?

On summing up the evidence submitted in reply to these three questions it was found that everyone who had had personal experience in the prevention of venereal disease by immediate selfdisinfection was wholeheartedly in its favor as a valuable means of preventing these diseases. In answer to the question as to whether selfdisinfection requires particular skill in men and women there was almost unanimous opinion that immediate selfdisinfection was much more difficult to carry out in women than in men, and that it could not be carried out by women unless a comparatively complicated apparatus and considerable quantity of disinfecting fluid were available. Miss Rout's evidence showed that in certain particular instances immediate selfdisinfection in women is of value. As regards men, thirteen considered that no particular skill was required and six that skill was required. These six had little if any personal experience, and their opinions were based on theory rather than practice. In reply to the question in regard to the relationship of alcohol and venereal disease opinion appeared to be almost equally divided, the balance being slightly in favor of the conclusion that alcohol is not an important factor. Figures produced by two witnesses, showed that alcohol appeared to be an unimportant factor.

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Medicolegal Notes.

EMPLOYEE OF HOSPITAL NOT LIABLE FOR NEGLIGENCE OF FELLOW EMPLOYEE

Plaintiff, on the advice of her family physician, went to a charitable hospital to have her tonsils removed by the x ray method. She was there introduced to the hospital's x ray technician, who was not a licensed physician. While administering the third treatment he neglected to use a filter, and as a result plaintiff suffered an injury for which she sued the specialist in charge of the hospital's x ray department, who received for his services one half of the fees paid to the hospital for x ray work. The defendant was not consulted by the plaintiff, nor did the latter see him at any of her visits to the hospital. He testified that he prescribed x ray treatments, but did not administer them or take x ray pictures; that this work was done by the hospital's technician, to whom he gave directions for the x ray treatment of tonsils.

The technician was not employed by the defendant. He was not the defendant's agent or servant. They were fellow employees of the hospital. The Massachusetts Supreme Judicial Court holds, Withington v. Jennings, 149 N. E. 201, that the defendant was not responsible for the technician's neglect in administering the treatment which was entirely in the latter's control. The evidence did not show any negligent act of the defendant contributing to plaintiff's damage; he did not participate in the operation, and was not liable for her injury. It was held that a verdict was properly directed for the defendant.

BINDING EFFECT OF MEDICAL EXPERT EVIDENCE

In a proceeding to review an award of compensation for the death of a workman who fell from a scaffold, fracturing his skull, the question was whether the fall was caused by a stroke of apoplexy, which was shown by a pontine hemorrhage in the deceased's brain, or whether the fall preceded the stroke. The autopsy showed an extensive subdural hemorrhage covering the base and lateral surfaces of the brain, and a basal fracture running across the basal fossa of the skull. There appeared to be no doubt that this subdural hemorrhage was due to the basal fracture of the skull, and that this fracture was occasioned by the fall, and both together were sufficient to cause death. There was nothing in the physical appearance or condition of either the pontine hemorrhage, or the fracture of the skull and the subdural hemorrhage caused thereby, to indicate which of the two occurred first in point of time. The medical experts gave as their reason for their statement that the apoplectic stroke preceded the fall the fact that the pontine hemorrhage was not traumatic. The Industrial Accident Commission disregarded the opinion of the medical experts, and found that the fracture of the skull caused by the fall and subdural hemorrhage therefrom were the proximate cause of death and made an award therefor.

The California District Court of Appeal, Second District, William Simpson Const. Co. v. Industrial Acc. Commission, 240 Pac., 58 (hearing denied by Supreme Court, Oct. 22, 1925), says that the rule to be drawn from the decisions of the California courts as to the binding force of medical expert testimony appears to be that whenever the subject under consideration is one within the knowledge of experts only and is not within the common knowledge of laymen, the expert evidence is conclusive upon the question in issue. It follows that in such cases neither the court nor the jury can disregard such evidence of experts, but, on the other hand, they are bound by such evidence, even if it is contradicted by nonexpert witnesses. The same rule would, of course, apply to a proceeding before the Industrial Accident Commission. Under this rule, the Commission, in the present proceeding, could not reject the evidence of the medical experts when testifying upon any subject peculiarly within their own knowledge. The same rule would apply as to opinions of the medical experts upon a subject solely within their professional knowledge, and not within the knowledge of the ordinary individual.

EVIDENCE OF LICENSE AS OSTEOPATH HELD ADMISSIBLE IN PROSECUTION FOR PRACTISING WITHOUT LICENSE

In a prosecution for practising medicine without a license, the Iowa Supreme Court holds, State v. Cornelius, 204 N. W. 222, that it was error to exclude evidence that defendant was a regularly licensed osteopathic physician, since, if what he did in the way of diagnosis, treating patients, and prescribing and giving medicines, was no more than he was authorized to do as an osteopathic physician, he was guilty of no crime. But a license as an osteopathic physician would be no protection if he gave or prescribed internal curative medicine.

If prescriptions signed by defendant were merely in the nature of orders for medicines to be kept and used as required in the hospital where he was employed under a physician, it is held that they had no tendency to establish the charge and should not have been admitted, but if they were given to patients for the purpose of having the medicine prescribed taken, they were admissible.

The trial court instructed that if defendant did no more than carry to patients medicine prescribed by a regularly licensed physician by whom he was employed he could not be convicted, but that he had no right to prescribe any medicine, even under the supervision of such physician. It is held that if defendant was authorized to practise as an osteopathic physician, he had a right to prescribe such medicine as the law permitted him to prescribe, but that otherwise the instruction was correct. Under Iowa Code of 1924, §2538, it is only students who have had not less than two courses of lectures in a medical college of good standing who are permitted to prescribe under the supervision of a preceptor.

The fact that defendant prescribed or administered medicine under the direction of a duly licensed physician, if he had no right to do so at all, or if he prescribed or administered medicine that he, as an osteopathic physician, was prohibited from prescribing or giving, would, it is held, afford him no protection.

Judgment on a verdict of guilty was reversed and the case remanded for a new trial.

THIRD PARTY'S PROMISE TO PAY FOR MEDICAL SERVICES FOR CHILD

The Georgia Court of Appeals holds, Pope v. Ellis, 129 S. E. 11, that where a physician renders professional services to a minor child of the tenant of a building, solely upon the credit of the landlord's promise to pay for such services, the promise is an original and not a collateral undertaking, and is not within the statute of frauds. In this case the jury were held authorized to find, from the evidence, that the landlord (the defendant) did make, in substance and effect, such a promise. In such a case, it is held, the jury may find that the promisor is liable for the services of the doctor, even though the father of the child treated was ignorant of the contract between the promisor and the doctor, and regarded himself as solely liable for such services.

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Conceptions of Modern Philosophy and Their Application to Medical Science*

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New York

It is well known that at the time of Hippocrates medical men were likewise philosophers. Gompers in his wonderful book, *Greek Thinkers,* has given a splendid account of the achievements of this school. But the introduction of philosophy into actual medicine was very dangerous at a time when theoretical knowledge in medicine was very limited, and so it came about that wild speculation replaced scientific observations and conclusions. When Johann Mueller banished speculation from medical science he did the greatest service to our profession.

But times have changed. Just as it is possible nowadays to perform operations which would have meant certain death before asepsis was introduced, so it might be possible now, not only without harm but to great advantage, to reintroduce philosophical ideas into medicine.

Before entering into the subject proper of my paper, I should like to show you in two instances how valuable the applications of formal logic could be to our medical discussions. A number of times the subject of disappearing tumors was brought before this society. If no conclusions were reached it was not due to the difficulty of deciding the issue but to the disregard of an important logical fact. You know that induction is the basis of all our knowledge. On that account the syllogism Barbara is incorrect. We say for instance: All humans are mortal. Mr. Smith is a human being, therefore he is mortal. This syllogism is in fact valueless. We only know from experience that all human beings die, but in the strict scientific sense we can not make that statement as long as Mr. Smith is living.

In this case, of course, it sounds ridiculous, but if you apply the same syllogism to cancer you will see how the mistake crept in.

We thought that all tumors which histologically appeared to be cancers were malignant and drew the following conclusions: All cancers are malignant; this tumor is histologically a cancer, therefore it is malignant. We were not entitled to say that all such tumors were malignant, but that they have a malignancy of various degree. Some of them develop very quickly, others disappear spontaneously. If such a tumor had disappeared once only in the memory of man the conclusion would have always been uncertain.

Another mistake, this time against the principle of relativity, was made by my distinguished friend and member of this society, Dr. Oberndorf, in a paper recently published in a German periodical. He reports the case of a man in whom a psychosis developed from the fact that his penis was abnormally large. He argues against Alfred Adler's theory of psychosis, which is largely based on the conception of *Die Minderwertigkeit der Organe.* He says that in this patient the psychosis developed on account of an *Ueberwertigkeit.* This, of course, is not correct, as the patient, and he is the one to be considered, felt it as a handicap, what in this case it really was. Values are, according to the Austrian school of political economy, always subjective and therefore relative. To him the anatomical abnormality was a misfortune, and I am sure that the good result obtained was due to the fact that, once the cause of the psychosis was found, it was possible for the doctor to convince the patient that his trouble was not so serious after all.

John Morley, in his book on compromise, speaks of the utility of error. He comes to the conclusion that though one can not deny that error, untruth, may have its blessings, the harm done by it far outweighs its advantages. John Morley deals in this book mostly with religious and political problems. It would, however, be interesting to look at this problem from the broadest point of view. First of all it may be necessary to show how inadequate our language is to express our thoughts. An error is a deviation from truth. Untruth is contrary to truth and reality. That seems on the face of it perfectly clear, but I shall try to show you, on the basis of the writings of Hans Vaihinger (the most important of which is the *Philosophy of the As-If*), that the definition is not complete, as it does not take into account that an error, an untruth, or a fiction, can be purposely, voluntarily and successfully used in search of truth. An error, untruth, according to the sense of John Morley, is an intentional deception used for the sake of deception. An error, untruth, fiction, used according to Vaihinger, is a conscious, intentional use of an error as an aid in the search of truth. Error,

*Read before a meeting of the Metropolitan Medical Society.

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untruth, in the first meaning is intentional, kept up to perpetuate the deception; in the second, it is used only as a stepping stone, a device, or, as the Germans say, *ein Kunstgriff*, a form of mental economy, and it is corrected as soon as its purpose is attained.

Thus, before entering into the discussion of its application to medical science, let me pause an instant and give examples from the exact sciences. We speak of the circle as if it were a polygon with an infinite number of sides, and we figure its area by this means, although we know that a circle is not a polygon. We speak of ether in physics as a substance without weight, offering no resistance, noncompressible and absolutely elastic. This is clear nonsense from the layman's point of view, impossible, contradictory. Still, this conception has been most useful in the theory of electricity. We call a circle an ellipse, the foci of which are infinitely close and in this way we can apply the equation of the ellipse to the equation of the circle by making the distance equal to zero. In mathematics we deal constantly with infinitely small figures that are purely fictitious but still the results are correct because at the end of the problem the infinitely small figure is made equal to zero and so are all the products and can be dropped out of the calculation, making the results correct. The root of -1 is called an irrational figure. It has no meaning and is still most useful.

Fictions, as such, have been used in all sciences. Adam Smith in his *System of Economics* made the supposition that every human act is directed by egotism. This is obviously untrue, but if he wanted to develop his theory and show the basis of an economical development, he had to disregard what was not absolutely essential—what did not fit into his system for the time being, at least. The person who wants to develop general ideas has to exclude certain facts nonessential to his system to avoid being drowned in a sea of detail, just as the painter puts on his canvass what he considers essential to illustrate his impression. Adam Smith's assumption is evidently fictitious, and it is clear that there are many other factors controlling the individual as well as nations, though egotism is obviously the strongest.

The object of these examples is to show that we can get correct results in spite of the use of untrue, contradictory, erroneous premises. This is possible only by correcting the error after the result is achieved. It is sufficient to realize the fictitiousness of an assumption and to look at it merely as a device, and not to regard it as an hypothesis or theory which must eventually conform with reality.

If we once realize the fictitiousness of some of our assumptions, we could save ourselves a great many discussions, correct a great many of our errors which develop from conclusions based on false premises. These mistakes are due to our misunderstanding of the essence of language. Language does not represent reality; it is not generally recognized that the logical functions have nothing to do with the objective world; their ways and detours must not be mistaken for real happenings. They are entirely different, but its value manifests itself by the fact that the logical functions, working according to their own laws, coincide again in the end with reality (Vaihinger).

Let us now apply these ideas to medicine. The teleological point of view has been a very much debated topic. That there is a ruling and directing power is hotly denied by some and strongly supported by others, to whom it seems the only possible way of explaining the development of higher forms of life. Could useful mechanisms develop if this development were not guided by a conscious power? I do not wish to discuss this problem, except by pointing to the works of Rudolph Goldscheid who showed that motion is not conceivable without direction; that development is motion and that the development into higher forms can easily be explained by Darwin's *Survival of the Fittest*.

It is undoubtedly proper to apply the idea of teleology to the medical science, and it has a very beneficial influence indeed. Not so long ago we did not understand the importance of the ductless glands, the pineal body, the hypophysis, the thymus and other such organs which were looked upon more with curiosity than with interest. But they exist, and it is of the very greatest value to think that they exist for some purpose. This conviction induced many to look for their use and we know now that these organs are of vital importance for the existence and development of animals as well as human beings. The mistake we made was to regard teleology as a hypothesis or theory rather than a fiction. We know that a group of physicians think of the appendix as an integral and important part of the body because it exists. I need not say that surgeons here and in other places do not share this view. I do not want to say that this idea is necessarily wrong and that studies to that effect may not be proper. But the fact that the appendix exists is no proof whatsoever that it is of any value just because teleology is not a hypothesis but a fiction.

According to Vaihinger, an hypothesis can be proved to be correct and a reality. Fiction is always untrue, contradictory, arbitrary. To show the difference more clearly, I shall give you two instances. Formerly, before the Wassermann test was known, we treated cases as if they were luetic. If our supposition was correct—if the treatment succeeded—we considered the fact as proved, *ex iuvantibus*. If not, the hypothesis was wrong.

Cancer was considered by many physicians as caused by amebæ. Dr. Richard Lewisohn, of New York, treated some patients by emetine, as if this assumption were correct. The result was negative. The hypothesis was proved wrong.

The teleological viewpoint, however, contains elements which are absolutely contradictory. It is a fiction. But, as previously shown, this does not make the use of it impracticable, harmful, unjustified. The trouble begins when we use it as an hypothesis or theory instead of merely a fictitious idea, a stepping stone, for reasons of mental economy.

Another fictitious idea used so much in medicine is the norm. It is hardly necessary to say much on this point. We know that the norm does not exist, that it is pure fiction. Norm does not mean anything else but the average, average in itself is nonexistent. Norm has nothing to do with usefulness. The shortsighted eye is far more useful to the scientist who uses his eyes for reading or microscopy. The artist's eye sees things quite differently from the way we see them, and it is this difference probably that makes

them artists. The normal visceral sense is poor, a very important fact, as an increased sense would make us unfit for work. Still, a finer sense would probably tell us pathological sensations in the body before the cause of that sensation becomes incurable. Think what a blessing it would be if a patient could tell us that he felt pain in the upper ileum or the liver or the pancreas, etc., as he can when the left foot or the right ear hurt him. It is true that many people know that the norm is only an artifact—being identical to the average. Many unnecessary researches have been made to establish as correct an average as possible, but when it comes to application, the results are useless and often misleading. In the tables of a health organization the normal blood pressure is given dogmatically for every age.[1] This is necessarily misleading, as blood pressure is so labile that the change of 5 to 20 mm. is of no importance whatsoever. In fact, the increase in the average blood pressure as found with increasing age is only due to pathological changes in many old people. Nobody ever died from having a blood pressure of 120.

The greatest trouble we experience, however, is in the process which we call "making a diagnosis." What does diagnosis mean? To make a diagnosis means to classify a given case from the pathological point of view. If we analyze this procedure, we must see at once that this means grouping with analogous cases where similar findings have been made. The definition of analogous implies that there are no identical cases. As a matter of fact, there are no identical diseases and there are not even diseases —but diseased human beings. Strictly logically speaking, there is no identity. What we call identity is only continuity based on memory. Boltzman, the famous physicist, used to say that the same person is different if he stands in another corner of the room, as the gravity and the relation of masses is changed. A man is different today from what he was yesterday or will be tomorrow because the metabolism is constantly changing. A person might be immune against an organism today, and might fall victim to it tomorrow probably because his endocrine makeup has changed. If diseases were identical, we should not experience such different development. We should not see patients recover or die from the "same disease." A disease is the result of the condition of the patient and the nature of the conditions.

I realize that this is sufficiently appreciated, but just as a man may be religious or ethical in theory but does not practice his conviction in his daily life, so a large majority of physicians do not apply this fact in practice. They may say that they know it, but in their discussions no trace of it is to be found. Take, for instance, the group of diseases which include Hodgkin's disease, lymphosarcoma, lymphoma, lymphoadenoma, etc. In every discussion on this subject, for instance in this society, physicians try to analyze these forms and to subdivide them—perfectly unnecessarily. It is true that certain forms retain always the same characteristics by which they are classified, but the borderline cases are those that show the classification to be perfectly arbitrary—fictitious—misleading. Often we have to revise a diagnosis, not because the classification was incorrect at the outset but because we did not take into consideration the further development of the disease and the possibility of its changing into another form.

What physicians are trying to establish is a type. But it is not difficult to show that type is fictitious, that there is no type. We create a type by disregarding certain minor symptoms—certain nonessential traits—exactly in the way we formulate an idea. I must repeat that this does not mean that we should not try to establish a type. If we want to understand each other, we have to use types as a method of mental economy. It would be practically impossible to discuss anything if we could not abbreviate certain mental mechanisms by condensing them into words. Teaching would be entirely impossible, and it is just in teaching where the establishment of a type is of greatest help. In a clinic we try to demonstrate a case as nearly akin to the type as possible to develop a picture in the mind of the student, but we fail to explain to him that this type is nonexistent, and when the student enters practice, he must feel like a man among strangers though they may speak a familiar language. In the making of a diagnosis the classification is necessary. Without classification we could not learn, we could not teach, we could not understand each other, except by minute descriptions of details which would only be perplexing. But this realization should make us tolerant. Not so long ago we were taught that there are two forms of pneumonia—lobar and lobular. Now we have divided it into many groups, have found that they are mostly mixed infections, and it may not be long before we shall analyze each case not only according to the kind and virulence of the invading organism, but to the special importance of each of the species in the clinical picture. It is probable that the patient who carries in his lungs more of the organisms belonging to one group and less of the other may have more chance to survive than the others. Here we see the type has practically disappeared and an entity has been established which excludes the possibility of an identical case.

This shows that even in infectious diseases a rigid statement cannot be made. Far more difficult is it in cases where an infinite variety of conditions may exist—for instance, in the realm of endocrines.

It is generally said that the character and the very essence of the individual is founded on his endocrine makeup. If we realize the possibilities, we shall understand that from the viewpoint of endocrinology an identity or even type cannot exist. Until now endocrinologists have confined themselves to determining the symptoms which endocrine disturbance has produced. They tried to show how the functions of the endocrine glands differ from the average and how they influence the functions of other glands. By closely analyzing these facts they have been able to arrive at the therapy which went straight to the root of the cause of the symptoms. But already we see a tendency to establish types for the purpose of teaching and communicating. We call a case hypothyroid or hypoadrenal. The result is that they have to admit at once that a case that looks like hyperthyroidism is not a true hyperthyroidism, but that this

[1] Some time ago, a patient thirty-five years old, who had been examined at this health organization, came to me in mental distress, asking me to help him. His blood pressure was too high. It was 130 mm. In the table given, with this examination, the normal blood pressure for his age was limited to 124—not 125, nor 123—124 exactly. Every physician knows that this is nonsense.

increase in the thyroid gland is caused by inefficiency of another gland. This warning which is so often sounded would not be necessary if we would learn to understand that types must only be used as a device.

I do not think that when a physician speaks of a disease he has a type in mind, but a diseased person. When I speak of tabes, I think of certain cases of tabes which I saw. How could I otherwise class the bedridden patient with the man who does not show more than the subjective symptoms, such as pains. How often does it happen that such patients show only such slight symptoms that we call them abortive cases. Classifications are necessary, but we must never forget that they are only artificial, fictitious, useful for mental economy, but, after all, devices. This is most important when it comes to the treatment of diseases. It is still quite a common practice for a physician after making a diagnosis to look up his prescription book, whether actually or not, and prescribe a medicine which Dr. A, B or C has recommended. If we once would realize that we deal with sick people and not with diseases, we could never do this. It is true we speak of indications to treatment but this is done not methodically but practically. Let me illustrate this fact by my experience in physical therapy.

A patient is suffering from an infectious arthritis. We know that these conditions are due to an invasion of organisms which may have a special affinity for articular tissues, and we shall try to find and eliminate this cause. Whether we are successful or not, we proceed with the treatment. Most physicians prescribe salicylates and then physical therapy, while others condemn the use of the latter. Both are equally wrong. The success depends on the condition of each individual joint and its treatment, so it may happen that we have to treat the acutely inflamed joint with ice and another joint of the same patient with wet dressings and massage because the process has become subacute, and still another joint might need heat, as the process has subsided and we have to deal with the local results of the infection only. The treatment, therefore, does not depend on the diagnosis but on the local condition.

Someone may say that I advocate symptomatic treatment. My answer is that the indication termed *indicatio causalis, morbi and symptomatica* is entirely misleading. For example, take the blood transfusion. Such a transfusion in a patient with a tenia solium is strictly symptomatic as long as the tapeworm is not driven out. It is symptomatic in pernicious anemia, as the patient dies eventually. It is symptomatic in the case of hemorrhage in typhoid fever. But repeated transfusions may pull the patient through the stage where such hemorrhages occur and may save him. It is not symptomatic where a patient has lost blood by injury, but it is symptomatic when it is lost in the course of a pathological process and still lifesaving if it permits us to relieve this pathological condition by an operation. The relief of pain by a morphine injection in a case of tabes is a symptomatic treatment of passing value. But such an injection can save the life of a man who suffers from an attack of angina pectoris, though it does not cure him. If one treats an acutely inflamed joint in the proper way, one may be able to restore complete function of the affected joint even if it is not possible to find and remove the underlying focus. The fault which we find with the symptomatic treatment is only based on a logical error and is due to a wrong interpretation of the word. Treatment of hypothyroidism with the thyroid gland is, so to speak, a symptomatic treatment, but it can replace the missing function of the thyroid gland. Endocrinology is more or less based on socalled symptomatic treatments. But after all, the symptoms form a complex which we call a disease.

All this does not mean that we must abandon entirely routine treatment, and that we must not profit by the experience in other analogous cases, but we must not be dominated by such a routine. Many will say that the good experienced physician individualizes. He does so not logically or consciously, but empirically. Does not Socrates say that he prefers the man who does wrong consciously to the man who does right unconsciously? If a physician is confronted with a given case, his mental process is generally as follows: Case B resembles Case A where the treatment was successful. His mental process, however, should be, Case B has the symptoms a, b, c, d. I wish to treat these symptoms in such a way that the patient may return to his normal condition. I could accomplish it if I could produce the reaction 1, 2, 3, 4. Which of my methods will be useful in accomplishing this task?

To show another instance where the lack of philosophical reasoning has brought about an endless, fruitless discussion, I may mention Freud's works. No exception could be taken, no objection could be made to the Freudian methods and ideas if we would look upon his ideas as fictitious instead of as theories or hypotheses. This would allow us to exclude cases which do not fit into his system instead of forcing them into it.

There was a time when philosophy directed the medical sciences. Speculation stood for observation and hampered the progress. These times are happily past but the fear of speculation estranged the physicians from philosophy even now when philosophy no longer deals with metaphysics, but with the foundation of our thinking, our cognition. It is deplorable, as it strengthens us in our belief that our methods are correct and infallible. The exponents of exact sciences have long recognized this.

In conclusion, I wish to reiterate once more that I do not mean to say that it would be advisable to do away with our present way of thinking, talking and acting, that everything that we considered to be true is an error. This is not the case. Classification, forming of types, rules, establishing of norms as a starting point, are absolutely necessary to progress. Everything in the world exists only in relation to something else, and therefore we must have a starting point or an accepted standard. These things are only conventions—therefore not facts but fictions. Our system of thinking and working is of great value in obtaining an object but we must not forget that its value is not greater than the help it affords us. It must not dominate us. I had a teacher who told us, "Gentlemen, do not let any patient die without a diagnosis." He meant well but he was the worst diagnostician, and was still worse as a physician. Diagnosis must not be a fetish if it means classification.

The Placing of Thoracoplastic Cases in General Surgical Wards and Their Medical Care Thereafter*

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New York

The more and more gratifying results obtained in late years from thoracoplasty in far advanced cases of pulmonary tuberculosis have created the desire to give the benefit of such surgical treatment to the consumptive poor as well as to the rich, but in the state of New York a serious obstacle has been met in the law which forbids tuberculous patients being admitted into the surgical wards of the general hospital. This law was enacted some years ago on the recommendation of the state board of charities.

Dr. Willy Meyer called on me recently wishing to ascertain my personal opinion on the alleged danger of spreading the disease when a tuberculous patient on whom thoracoplasty has been performed is placed in the surgical ward of a general hospital. I felt then, as I feel now, that I could answer this question by saying that in the well conducted, sanitary hospital of today there is no danger whatsoever to adults. But in such a vital matter as this I believe one man's opinion should not count for much and I promised Dr. Meyer to collect the opinions of some of our leading tuberculosis specialists and sanitarians on the subject. For this purpose I addressed the following question to each of the names selected as authoritative and representative:

Does any danger arise to patients suffering from other diseases when a tuberculous patient who has been operated on by means of extrapleural thoracoplasty, for rib resection or cutting or avulsion of the phrenic nerve is placed in a corner of a surgical ward of a general hospital?

In reply to this inquiry the following physicians stated their entire agreement with me: Edward R. Baldwin, of the Trudeau Sanatorium; Sherman G. Bonney, of Denver; Kennon Dunham, of Cincinnati; Charles J. Hatfield, of Philadelphia; Maurice Fishberg and James Alexander Miller, of New York; George M. Kober, of Washington; Allen K. Krause, of Baltimore; Walter J. Marcley, of Minneapolis; Charles L. Minor, of Asheville; Edward O. Otis, of Boston; F. M. Pottenger, of Monrovia, Calif.; Joseph H. Pratt, of Boston; E. Richmond Ware, of the Barlow Sanatorium, Los Angeles, and William Charles White, of the United States Public Health Service. The last named gentleman even added the following significant words: "I would strongly urge the elimination of all such expressions as 'placing in a corner surrounded by a screen, or cubicle.' This only postpones the day of beneficial care of those afflicted with tuberculosis."

It might be interesting to note all the additional comments that were made on the situation, but as it is I will quote only a few.

Dr. Baldwin said: "You have hit upon a very real problem in the modern treatment of tuberculosis and I confess it is a puzzling thing to work out. As you know, there is a great deal of hypocrisy in this matter of treating tuberculosis in hospitals, or for that matter also in hotels, both in country and city."

Dr. Dunham said: "You are bringing up a very timely and important subject and I am glad to give it all the support within my power."

Dr. James Alexander Miller said: "In my opinion, a good many of these rules about taking tuberculous patients in general hospitals are antiquated and not in line with modern medical knowledge."

Dr. Allen K. Krause, of Johns Hopkins University, the editor in chief of the *American Review of Tuberculosis,* whom we consider one of our best authorities in his specialty, wrote as follows: "I do not see how a patient with pulmonary tuberculosis, who has undergone a surgical operation, can be dangerous to his neighbors in the wards of any hospital that is being administered according to present standards of hygiene and the ordinary precepts of modern care and sanitation of the sick. For such a person to put other patients in jeopardy requires conditions which would arise out of incompetent management of the institution."

Lastly, may I mention the expert opinion expressed by no less a person than the president of the National Tuberculosis Association and head of the Henry Phipps Tuberculosis Institute of the University of Pennsylvania, Dr. Charles J. Hatfield, who wrote me as follows: "I am strongly of the opinion that there is no danger whatever to adult patients in the surgical ward of a general hospital from the admission of a tuberculous patient operated upon for thoracoplasty. I am quite willing to have this opinion quoted."

Of the many courteous replies coming from the secretaries of the state boards of health, many of whom are distinguished sanitarians and also tuberculosis experts, I wish to quote a few of the most striking sentences that they added to their reports as personal opinions.

Dr. S. W. Welch, state health officer of Alabama, wrote: "The public phobia in regard to these unfortunate patients is unfortunate, and for the most part groundless."

Dr. F. T. Fahlen, state superintendent of public health of Arizona, wrote: "Five years ago I developed an ugly, acute appendicitis, was operated on, and made a slow recovery. This operation was done in a hospital filled with tuberculous patients and I feel morally certain there were a number of tubercle bacilli floating around all the time. I did not develop tuberculous peritonitis."

Dr. C. W. Garrison, state health officer of Arkansas, wrote: "There are no laws in this state governing the admission of tuberculous patients in surgical wards of general hospitals. Each hospital management regulates the admission and policies. Our great handicap in this state has been to secure adequate hospitalization for emergency surgical cases."

Dr. Tracy R. Love, secretary of the state board of

*Read by invitation before the Eighth Annual Meeting of the American Association for Thoracic Surgery, Washington, D. C., May 5, 1925.

health of Colorado, wrote: "We, in Colorado, feel that the hospitalized patient with tuberculosis is less a menace than the one who is on the street. We have had patients on whom thoracoplasty has been performed, and these patients have then been allowed to have beds in a surgical ward and it was not even deemed necessary to keep screens around them. Furthermore, we do not hesitate to allow patients with active tuberculosis to have ward beds when, for any reason, surgical interference has been necessary."

Dr. William F. King, state health commissioner of Indiana, wrote: "It seems to me that a regulation of this kind is unnecessary and there would be no danger of transmitting tuberculosis to other patients in a ward except through the most reprehensible and criminal carelessness."

Dr. Oscar Dowling, president of the Louisiana state board of health, wrote: "I thoroughly agree with you that there is no valid reason why patients who have been subjected to a thoracoplasty should not be admitted to the surgical ward of any hospital."

Dr. C. F. Kendall, state commissioner of health, Maine, wrote: "I have no hesitation in answering that, in my opinion, there is no danger whatever if a screen is placed between a tuberculous patient and the other patients, and if the attendants remember the precautionary measures that any well trained nurse would be likely to observe."

Dr. James Stewart, state health commissioner of Missouri, wrote: "I personally feel that there is but the remotest danger in the transmission of tuberculosis to other patients and attendants, provided, of course, that the well established principle of hospital ward technic is carried out."

Dr. W. H. Wilson, chief of the Nebraska bureau of health, wrote: "My personal opinion is that tuberculous patients taken into hospital wards to be operated on by thoracoplasty are entirely free from danger to other inmates, provided the proper sanitary precautions are carried out, as they should be in any case of tuberculosis admitted to a general hospital."

Dr. Charles Duncan, secretary of the state board of health of New Hampshire, wrote: "We see no reason why tuberculosis cases of this nature properly handled should not be received in hospitals conducted for surgical cases."

Dr. H. B. Costill, director of health of the state of New Jersey, wrote: "I understand that many of our hospitals are admitting to surgical wards tuberculous patients, and our men claim that they have found no ill results from so doing."

Dr. G. S. Luckett, director of the bureau of public health of New Mexico, wrote: "It seems to me that the demonstration has been rather convincing that the use of cubicles and attention to strict asepsis will prevent cross infections."

Dr. R. G. Leland, chief of the division of hygiene of the state of Ohio, wrote: "I can, without reservation, indorse the opinion of the leading experts in tuberculosis mentioned in your letter, that there is no danger of infection to other patients in a general hospital arising from a tuberculous patient in a surgical ward."

Dr. W. G. Turnbull, deputy secretary of health of Pennsylvania, wrote: "I would consider the passing of such a law or of such a regulation as an admission that we have been teaching erroneous doctrines in the past. If we admitted that we cannot take such care of a tuberculous patient confined in a hospital bed that he will not be a menace to those around him, we are wasting time trying to teach doctrines of this sort to ambulatory patients who are taking care of themselves."

Dr. B. U. Richards, secretary of the Rhode Island state board of health, wrote: "It occurs to me that the term 'room' might be interpreted rather liberally. I am not at all certain, but a part of a ward made separate by the use of screens might legally be interpreted as a room by itself. If the matter should come up for interpretation here in this state, I should certainly try to get away with it."

Dr. James A. Hayne, secretary of the state board of health of South Carolina, wrote: "As far as admitting tuberculous patients operated on by thoracoplasty to the surgical ward of a general hospital, I agree with Dr. Nicoll that the chances for infection are so limited that I do not see why they cannot be admitted to the surgical wards."

Dr. E. L. Bishop, commissioner of public health of Tennessee, wrote: "In my judgment, the danger to other patients would be remote."

Dr. T. B. Beatty, state health commissioner of Utah, wrote: "I cannot conceive of any danger provided ordinary precautions are taken."

Dr. C. A. Harper, state health officer of Wisconsin, wrote: "Such procedures are left to the hospital trustees or governing body. It has been practically the universal practice for a great many years to admit tuberculous patients needing surgical care to any and all medical and surgical hospitals in the state. I know of no hospitals in which there is a bar against such procedures. I can hardly conceive of a remote danger to other patients and attendants by such procedure, especially when ward and hospital technic is conducted according to the well established principles of sanitation."

Dr. G. M. Anderson, state health officer of Wyoming, wrote: "It is my opinion that very little danger arises to the patient's suffering from other diseases when a tuberculous patient who has been operated on by means of extrapleural thoracoplasty is cared for properly in a ward where there are other patients of a nontuberculous character. There can arise very little danger of their contracting tuberculosis."

Instead of giving any further quotations from the tuberculosis experts and the opinions of state health officers, I will quote from a letter received from Dr. Matthias Nicoll, Jr., the distinguished state commissioner of health of New York, as follows: "I need hardly say to you that in my opinion there is but the most remote danger, and one hardly conceivable, of transmitting tuberculosis to other patients and attendants by such a procedure, provided ward technic is conducted according to the well established principles of sanitation."

Dr. Linsly R. Williams, the managing director of the National Tuberculosis Association, writes: "I am heartily in accord with the resolution adopted by the National Tuberculosis Association in 1916 which urged that there be special tuberculosis wards in general hospitals. This we have always felt was a wise and necessary measure for properly caring for cases of tuberculosis. I believe that there is no danger of contracting tuberculosis from patients affected

with that disease in well conducted hospitals or sanatoria. I know, however, that there are many hospitals and sanatoria which are not conducted as well as they should be from the point of view of prophylaxis." To this objection, if it may be considered such, I can only reply that in a badly conducted general hospital there is just as great a danger of propagating other infectious diseases, such as syphilis, gonorrhea, pneumonia, and streptococcus infections, as tuberculosis, and such institutions have no right to exist.

Dr. Bowditch, of Boston, a well known tuberculosis expert, however, does not believe that a movable screen in a corner of a surgical ward is sufficient protection against infection. He then speaks of the unwritten law in Boston that tuberculous patients shall not be admitted in the general hospitals.

According to the information received from Dr. Eugene R. Kelly, the late commissioner of public health, there is no state law in Massachusetts prohibiting the admission of a tuberculous patient operated by thoracoplasty to the surgical ward of a general hospital.

Dr. Joseph H. Pratt, of Boston, wrote me that he had had patients in general surgical hospital wards for thoracoplasty.

Dr. Frank Billings, of Chicago, the well known internist, is most strongly opposed to the idea, and answered as follows: "So far as I know there is no regulation or law in Illinois to prevent the treatment of a patient with pulmonary tuberculosis in a ward with other patients. However, it is not done and I am of the opinion that it would be a dangerous precedent to establish, for while proper precautions would be made in some institutions it is most likely that carelessness would follow in others."

Dr. Billings is mistaken, however, when he says there is no regulation or law in Illinois concerning this matter. Rule 5 in the newly revised Rules and Regulations for the Control of Tuberculosis in the State of Illinois reads as follows:

> "No person suffering from active or open tuberculosis, as defined in Rule 3, shall occupy the same room as a bedchamber or sleeping room with any other person or persons unless such person or persons are suffering also from the same form of tuberculosis. This rule does not however, apply to well adult persons acting as nurse or attendant under the direction of a legally qualified physician."

Dr. George M. Kober, of Washington, is of the opinion that we should not lose sight of the psychic effect of such cases on patients in the wards who are suffering from other diseases or injuries. He considers the decision of the State Board of Charities of New York arrived at several years ago (1909) quite proper, but believes that a properly constructed cubicle with a sheet as door would allay all fears that might arise in the minds of the other patients.

Dr. Willy Meyer was not quite content with my having these expressions from tuberculosis experts but wished me also to tell him how many states in this country have a law similar to this one in New York. Not being able to answer this offhand, I wrote to the state health officers of the forty-eight states and of the District of Columbia. I explained the condition in the state of New York and asked the direct question whether there was any law in their state prohibiting the admission of tuberculous patients operated upon by thoracoplasty to the surgical wards of general hospitals. The commissioners or state health officers of the following states most courteously replied with the decisive answer that there was no law in their states prohibiting a tuberculous patient operated on for no matter what cause to be admitted into the surgical ward of a general hospital: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Oregon (except in the city of Portland), Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, West Virginia, Wyoming.

All the forty-nine letters addressed to state boards of health were answered. The states of Illinois, Minnesota, and Virginia, the District of Columbia, and the city of Portland, Oregon, are the only ones besides New York reporting the existence of prohibitory laws. It is interesting to note that two of the four states having such antiquated laws have a right to boast also of having in their midst some of the largest surgical centres of the country. I refer to the state of Minnesota, made famous by the great work of the Mayo brothers, and the state of Illinois with its splendid medical schools.

The state of Virginia has the strictest law of all those which prohibit tuberculous patients, who have been operated on, being placed in surgical wards with nontuberculous patients. In this state any person violating the law shall be "deemed guilty of a misdemeanor, and, on conviction thereof, shall be subject to a fine not to exceed fifty dollars for each offense."

A very strong letter favoring such a law came from the state of Minnesota. I quote from this lengthy letter sent to me by the executive secretary of the Minnesota Advisory Commission for Consumptives, Dr. Robinson Bosworth, as follows: "It is our opinion that present regulations requiring that pulmonary tuberculosis cases be placed in rooms or in wards for their exclusive use is wise and reasonable. . . . Patients who are tuberculous should not be placed in rooms or wards containing nontuberculous patients. We see no good reason why an exception should be made of a thoracoplastic case." Yet Dr. A. J. Chesley, the secretary and executive officer of the State Board of Health of Minnesota, says: "My impression is that in spite of the section of the statutes quoted, the opinion of the most advanced medical men is that it is safe to treat tuberculosis cases, of the type mentioned in your letter of March 21st, in the surgical wards of the general hospital."

The thoracic surgeons with whom I communicated are almost unanimously of the same opinion. Dr. Hedblom, however, gave his opinion as follows: "My position in the matter would be that as long as the patient is raising sputum containing the tubercle bacilli, the same rules would apply to him as to a patient who has had no operation." Those of us who are responsible for early diagnosis never wait for its confirmation by the presence of the tubercle bacillus before taking relative precautionary or curative measures. When the physical signs and symp-

toms, aided if possible also by the x rays, strongly indicate the presence of tuberculosis, all precautionary and curative measures are immediately installed. We must also bear in mind that when the patient has a great deal of bronchorrhea, it will often require many specimens before the tubercle bacillus is found. At all events, if we would have to consider the patient operated upon by thoracoplasty as a possible source of infection, not finding the bacillus prior to or immediately after the operation, could not be a decisive factor.

Another objection to admitting tuberculous patients to our general surgical wards comes from the distinguished thoracic surgeon Dr. John Alexander, of Ann Arbor, Mich., now at Saranac Lake, who says: "As a paravertebral thoracoplasty in advanced tuberculosis is a grave operation I feel it incumbent on the hospital not to impose upon any patient accepted for the operation conditions that are unfavorable to him. I consider it an unwise policy to bring a person with far advanced tuberculosis from a country sanatorium and coop him up in screens in a large surgical ward in which the room temperature and ventilation are regulated for those patients accustomed to urban living conditions and in which the usual day and night noises and atmosphere of excitement could be expected only to have a harmful influence upon such a chronic invalid as a tuberculous patient immediately following an operation of the magnitude of thoracoplasty."

Dr. Alexander also says that we must consider the prevalence of phthisiophobia in the laity. I have been in a humble way trying to combat this exaggerated fear of the presence of a consumptive for a quarter of a century and was delighted to have found in our present movement a new weapon against it. In regard to Dr. Alexander's other objection I might say that in our great cities the majority of our patients for thoracoplasty comes from tuberculosis city hospitals where there are no such ideal climatic conditions as those under which Dr. Alexander would desire to have all tuberculous thoracoplastic patients placed. But even should some come from a place in the country, our surgical wards are usually well ventilated and quiet, and a screen near the open window does not exactly mean cooping up a patient who is confined to bed anyway after his operation. Certainly this objection to city air would apply to a private room as well as a ward.

Finally, I should like to ask Dr. Alexander if there are now, as he estimates (1), fifteen thousand persons with pulmonary tuberculosis in the United States for whom surgical intervention is indicated, in how many instances these unfortunate fifteen thousand could be operated on in separate rooms or separate wards under such ideal climatic and sanitary conditions as he feels it incumbent to provide for all patients that have come for thoracoplasty.

Dr. Charles H. Peck, of the Roosevelt Hospital, New York, replied to my letter as follows: "Dr. Willy Meyer has recently brought up the same question to my attention and asked to have our medical board express an opinion on the matter. Their reaction was rather unfavorable to asking for a change in the law. I think the feeling was that the psychic effect upon patients in beds adjacent to that of a pulmonary tuberculosis case would be quite as important as any actual danger which they could probably be protected from. My own feeling is that if these cases are to be admitted to a general surgical ward, they should be, as you suggest, in a separate corner shut off from the general ward by a screen or cubicles (glass partition)."

I am glad indeed to report that in the state of New York, where this latter precaution is observed, we are now permitted, since April 21st, to place tuberculous patients on whom thoracoplasty has been performed in the surgical wards of our general hospitals. How was this accomplished, when up to only a few months ago the New York State Board of Charities absolutely refused to change or modify the law which heretofore made it impossible to admit tuberculous patients into general surgical wards? The credit for this victory belongs primarily to the indefatigable efforts of Dr. Willy Meyer and, next, to the distinguished colleagues who sustained me in my humble opinion, and last but by no means least, to Dr. H. A. Pattison, of the National Tuberculosis Association, to whom I showed all the letters which I had received from sixteen of our leading tuberculosis experts in this country and the numerous letters received from tuberculosis authorities at the head of the State Boards of Health, the vast majority stating emphatically that no danger to an adult nontuberculous patient should arise from the presence of a tuberculous patient operated upon by thoracoplasty in the same ward. Dr. Pattison merely caused copies of all these letters to be made and submitted them, accompanied by a strong letter from himself, to the New York State Board of Charities. A special committee considered all the evidences before them, and the result was a modification of the original law, quite satisfactory to all concerned.

May I say, in answer to the fears expressed by Dr. Peck in regard to the psychic effect upon patients in beds adjacent to the tuberculous patients who have been operated upon, that tactful explanation and the separation by screen or cubicle would allay any apprehension on the part of other patients.

A most interesting situation exists in the state of Oregon, according to the following reply received from Dr. Frederick B. Stricker, the state health officer: "There are no regulations in the state which prohibit the admission of tuberculous patients to hospitals, but in the city of Portland there is a regulation which prohibits the hospitals of that city taking any tuberculous patients. This measure was made some years ago in order to prevent the erection of a state tuberculosis sanatorium in the city of Portland. Many attempts have been made to have this pernicious ordinance removed from the books but so far our efforts have been in vain. Of course, you know that every hospital in this city is taking tuberculous cases and there is no way of stopping them, but still these laws make it possible for hospitals to refuse to take tuberculous patients, which is being done every day in the city of Portland. All the cases that are in the hospitals at the present time are under some other diagnosis. Your interest in this matter is certainly commendable and I trust that you will be able to gather information that will be of value in making it possible for tuberculous patients to enter all hospitals."

(*To be continued*)

The Bassler Pancreatic Efficiency Test in Chronic Cholecystitis*

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The treatment of gallbladder disease is a question over which there has been considerable controversy. The surgeons consider gallbladder disease to fall legitimately into their field while the internists would have it in theirs. However, most surgeons agree that not all cases require or are fit for surgery. The internists, on the other hand, usually consider acute, suppurative and gangrenous cholecystitis as well as cholelithiasis conditions which require surgery. This discussion is not concerned, therefore, with these acute cases but with the chronic ones.

The end results of surgery are not always curative. Many of the patients are only partly relieved or not at all. In their reports the surgeons, themselves, admit from ten per cent. to twenty per cent. unimproved cases in addition to the mortality rate from the operation. Only a small percentage of these unimproved cases can be accounted for by recurrence of stones, stone in the ducts, infection of the ducts, adhesions, etc. Furthermore, there are patients who are treated medically for a long time, sometimes for several years, without relief and eventually require operation. On this account, any means which may help us distinguish cases that may be benefited by medical treatment without operation from those which will not and thus save valuable time is very important.

For many years surgeons have noted an enlargement or swelling of the head of the pancreas at operations on the gallbladder. This enlargement or swelling may be due to congestion, inflammation, edema or fibrosis. In the fibrotic cases the damage to the pancreas is permanent and the swelling remains until contraction of the connective tissue takes place. The edematous or inflammatory swelling usually resolves following removal of the gallbladder. Due to the location of the pancreas, however, we have no direct means of determining the presence of this swelling but must rely on indirect evidence, namely, pancreatic function or the examination of its external secretion. The older methods such as examining the stools for food remnants, enzyme activity, nucleus test, etc., are unsatisfactory as they are time consuming and inaccurate. Hypermotility of the alimentary tract and deficiency in absorption render stool examinations unreliable except in cases of gross pathology of the pancreas. Prophylactic or active treatment is then useless. There may be a fairly well marked pancreatic deficiency and yet it may not be evident in the stool as a result of the action of saliva, gastric juice and bacteria. Since the recent renewed interest in this subject by examination of duodenal contents several tests have been suggested. Some of them such as McClure's (1, 2) are too technical and liable to error to be of practical value in a busy office or clinic. To be worth while such a test must be simple, inexpensive, quick, reliable, and the factors of error reduced to a minimum. There have been many conflicting reports concerning the constancy with which the relative concentration of the three pancreatic enzymes occur in the same specimen and in the same individual at different times. In the digestion of fat and protein there are many factors which we do not understand and cannot control. We have no way of determining whether the trypsinogen has been completely activated by enterokinase, nor do we understand the optimum or necessary concentration of various salts and hydrogen ion concentration. In the digestion of fat we have such variables as bile with its changing content of bile salts, buffers, and hydrogen ion concentration, which are very important factors. The third enzyme, amylase, is one that requires no activation and is practically uninfluenced by bile, hydrogen ion concentration within reasonable limits above and below neutral, and its activity is easily determined. Saccharogenic tests, in which the amount of sugar produced by the digestion of starch is estimated, are not reliable because at a given time we have a mixture of dextrins, maltose and glucose which vary greatly in their relative concentration and in their individual reducing power. Alpha, beta, gamma achroodextrin (3) and maltose have twelve per cent, twelve per cent, twenty-eight per cent. and sixty-six per cent. of the reducing power of glucose respectively. For this reason Bassler (4) devised an amyloclastic test, a modification of the one advanced by E. E. Smith (5) for ptyalin, which he presented before the meeting of the American Medical Association in June, 1924.

In his experience he has found that the three enzymes are closely related in their concentration. When one is deficient all are deficient. This conclusion is also borne out histologically as there is but one type of secreting cell present whereas in the gastric tubules there are two types of cells for two secretions but one enzyme. The salivary gland also contains two types of cells but only one enzyme. Therefore, he argues, it is reasonable to assume that the pancreas has a single constant secretion containing the three enzymes and that when the pancreatic cells are injured the three enzymes are equally diminished. On this account the amyloclastic (starch splitting) power can be taken as an index of pancreatic function. This function has agreed with the clinical and pathological findings to a large extent. It is, however, not infallible. There may be extensive disease of the body or tail of the pancreas without an apparent decrease in function. However, any condition which interferes with the free drainage of the main ducts and any disease of the head invariably give evidence of a deficiency in the starch splitting power. Therefore, it is a valuable indirect sign of disease of the pancreatic head. Except in generalized fibrosis of the pancreas, organic disease of the body and tail rarely causes a deficiency; on the other hand, organic or inflammatory disease of the head invariably shows a deficiency whether the condition is transient or permanent.

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The symptoms of chronic pancreatitis may simulate those of chronic cholecystitis except for colic and jaundice. As a matter of fact, two years' experience with the test suggests that the socalled reflex gastric symptoms are more often due to an associated pancreatitis and gastritis than to a true reflex.

Every case of chronic cholecystitis should have a pancreatic test done by the internist or surgeon. If the pancreatic function is normal (ten to twenty Bassler units) medical treatment should be given a thorough trial unless the patient has frequent severe attacks of colic, in which instance the physician should be guided by his clinical judgment. If a low pancreatic efficiency is found (six units or less) and confirmed by a second test the gallbladder should be removed at once as it indicates secondary disease of the head of the pancreas which may progress, by delay, to a permanent fibrosis. The lower the function, the more likely is the pancreas to have undergone fibrosis. In the majority of unimproved postoperative cases a deficiency existed before the operation, due to advanced fibrosis. In these cases removal of the gallbladder will but slightly help the pancreatic condition. In the cases where the pancreatic deficiency is due to congestion or edema, removal of the gallbladder is usually shortly followed by a marked improvement in the symptomatology and the pancreatic function. Cases under medical treatment should have frequent tests made. A steadily decreasing function or one that remains low after several weeks of treatment is an indication for cholecystectomy. Postoperatively, the test is of value for prognosis and treatment.

The question of what to do for individuals with pancreatic deficiency both preoperative and postoperative is one that up to the present has not been satisfactorily solved. Many patients do well on pancreatic powder in large doses, one to three grams with soda bicarbonate. Others improve on feedings of freshly pickled pancreas at meals. Some patients show improvement as a result of a series of Lyon nonsurgical biliary drainages or the use of magnesium sulphate daily by mouth.

CONCLUSIONS

1. The Bassler pancreatic efficiency test is simple, easy to perform, accurate enough for clinical interpretation and inexpensive.
2. When low it usually indicates disease of the head of the pancreas.
3. By determining the condition of the pancreas it gives an indication for medical or surgical treatment in chronic cholecystitis.
4. It is of diagnostic and prognostic value, postoperatively.

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Renal Function Tests in General Practice*

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In recent years the study of the functional activities of the various vital organs has attracted, in an increasing degree, the attention of both laboratory workers and clinicians. Function tests of the liver, pancreas, thyroid, adrenals, pituitary and other digestive and endocrine glands have become fertile fields for research. Mackenzie and others have stressed the importance of estimating the efficiency of the circulatory system from both diagnostic and prognostic standpoints. The response of the myocardium to measured exertion and other heart function tests have become almost indispensable in cardiac practice and life insurance companies now require them in all suspicious cases. Even the mental processes are being tested by the psychologist with almost mathematical precision. No less attention has been devoted to the study of renal function.

It has long been recognized that there are types of nephritis in which routine urine analysis has failed to give diagnostic help, especially in early cases. For example, we know that many instances of interstitial nephritis and renal sclerosis, even in moderately advanced stages, fail to show either albumin or casts in the urine. Moreover, there are conditions in which albuminuria and even casts may be present without significant renal lesions or impairment of function. In such cases the value of renal function studies can scarcely be overestimated. On the other hand, in the acute forms and in the comparatively rare chronic nephritis with edema, the diagnosis is usually readily made without function tests even in their incipiency. Therefore, from a diagnostic viewpoint, at least, functional estimation is of most value in those chronic varieties, in which albumin and casts are frequently absent and which sooner or later are characterized by defective nitrogenous elimination.

The tests of kidney function advocated have been many and various, indicating that none is entirely satisfactory. Some of these offer technical difficulties and can only be used upon hospital patients, or at least by those having access to well equipped laboratories. On the other hand, among the most valuable and enlightening are some which are simple and can be readily and conveniently used by the general practitioner.

While function studies depending upon the ability of the kidneys to excrete foreign test substances, notably phenolsulphonephthalein, are helpful in some instances, they are rather technical and are not suitable for private practice. Moreover, in the presence

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of cardiac inefficiency or edema, intravenous administration is necessary to obtain anything approaching reliable results. The collection of blood for chemical studies is not a complicated procedure and reliable laboratories are available to most practitioners. However, the estimation of nitrogenous retention in the blood is of doubtful value as an early diagnostic test, although it is helpful in more advanced cases and often gives much prognostic information.

Comparison of urea concentration in the blood and urine offers insurmountable difficulties in extramural practice, and, moreover, the method is open to many fallacies. For these reasons the above tests are not here advised. At least their use should be restricted to those cases in which the more simple procedures reveal kidney insufficiency and seem to indicate more elaborate study.

Certain clinical findings give rise to suspicion of renal involvement. In addition to the more or less marked toxic symptoms, nocturia, arteriosclerosis, hypertension, secondary anemia, failing vision, etc., unless otherwise explained, call for careful and repeated examinations of the urine. Should these prove negative in their results, the renal functions should be investigated. In routine urine examinations it is advisable to analyze both morning and evening specimens. Urine obtained after the stress of daily metabolic activity often shows abnormalities which are absent in morning samples. Moreover, comparison of the morning and evening specific gravities is advantageous. Should these both be low, lack of flexibility and concentrating capacity on the part of the kidneys may be suspected.

THE TWO HOUR TEST

This fixation of the specific gravity can be more accurately determined by Mosenthal's (1) modification of the Hedinger and Schlayer (2) test—the so-called two hour test of renal function. It depends upon comparison of the volume and the specific gravity of two hourly specimens throughout the day and a single specimen during the night, in addition to estimation of the nitrogen and sodium chloride output. Originally a "high protein diet" containing 13.4 gm. of nitrogen, 8.5 gm. of salt and 1,760 c. c. of fluid was advocated. As the chief results agree regardless of the diet, this valuable test may be simplified and adapted to general use. When impracticable to employ this standard diet, the patient can have three full meals taken at 8 a. m., 12 noon and 5 p. m., the socalled normal diet, using a pint of fluid with each meal. No food or fluids should be taken between the meals or during the night.

The bladder is emptied at 8 a. m. and the urine collected at two hourly intervals until 8 p. m. All urine voided between 8 p. m. and 8 a. m. is collected in one quantity. Punctual collecting of specimens is essential and it is important that three hours should elapse between the evening meal and the beginning of the night period. The patient should be given properly labeled bottles for the six day and single night specimens.

Normal renal function is characterized by decided variations in the specific gravity of the specimens, reaching nine or more points if a high protein diet be used. The maximum concentration is usually obtained in the night urine, which should have a specific gravity of 1,020 or over. The volume of the urine voided during the night should not exceed 750 c. c. and should be less than the day output. Lowering of the maximum specific gravity and increased night volume of urine are said to be the most constant and reliable indications of renal impairment. "The nephritic kidney tends to secrete a urine of persistently low specific gravity," therefore fixation at a low point is suggestive of disease. Estimation of nitrogen and sodium chloride percentages is not essential and may be omitted, although lowered output of salt and nitrogen also points to hypofunction.

The Mosenthal test is one of the most reliable of the procedures for estimating the functional condition of the kidneys. It detects early renal involvement and possesses the advantage of simplicity, hence I feel that it is worthy of more extended application, especially in general practice.

THE CONCENTRATION DIURESIS TEST

Another helpful method of examining renal function is the concentration diuresis test, which determines the ability of the kidneys to excrete both concentrated and diluted urines. The method is not complicated and obviates the necessity of collecting two hour specimens; it also eliminates any question of standard diets. The test can readily be carried out by the busy general practitioner with the cooperation of any patient of average intelligence.

The ability to excrete urine of high specific gravity is impaired early in nephritis. In such cases, as a rule, the elimination of water is delayed. These important functions can be tested at the same examination. We first endeavor to force the kidney to excrete a concentrated urine following a twelve hour fast, after which the diuretic effect of a large quantity of water is noted. The simple procedure is as follows:

After the usual evening meal at 6 p. m., the patient abstains from food and water throughout the night and the bladder is emptied as completely as possible between six and seven o'clock. During the next three hours the fast and thirst are continued and at the exact expiration of this period the patient voids again. This three hour "concentration" specimen is saved for examination.

Immediately after voiding the patient drinks two and one half litres of water during the succeeding one and one half hours. This is a less difficult task than it would seem to be, especially if the water be not too cold. Least inconvenience is probably experienced if one litre be taken at the beginning of the diuresis test and a half litre at half hour intervals thereafter. During this three hour period all urine is collected. Normally, the volume of the concentration specimen varies between 50 and 200 c. c., while the "diuresis" urine exceeds 1,000 c. c., averaging about 1,500 c. c., or sixty per cent. of the fluids ingested. The specific gravity of these specimens should be carefully tested at room temperature. The concentration specimen should exceed 1021, while the diuresis sample should be 1003, or lower. Olmsted (3) asserts that in addition to detecting early renal disease, this test helps us to appreciate the degree of the cardiac factor where both heart and kidney are involved. "A good kidney and a poor heart will show a good concentration and normal specific gravity, but a very limited ability to 'diurese' water."

THE UREA CONCENTRATION TEST

The kidneys have the power of concentrating urea and other nitrogenous bodies to a remarkable degree. Normal urine contains from sixty to eighty or more times as much urea to a given volume as does the blood. This ability to concentrate urea is impaired early in nephritis, and advantage of this fact has been taken by MacLean and de Wesselow, who introduced the urea concentration test. This simple test indicates "lesions of a much slighter degree than are detected by estimation of blood urea." Moreover, it requires no manipulative skill other than the estimation of the urea in the urine. This can be done by any physician using one of the modifications of the hypobromite method. The Doremus-Heinz ureometer simpifies this examination. However, if the physician prefers, the specimen could be sent to a laboratory.

As the test should be preceded by a fluid fast of twelve or more hours, to prevent, or at least minimize, diuresis, it should be performed in the morning, preferably following a rather dry breakfast. The patient should be instructed to empty the bladder, after which fifteen grams of urea dissolved in 100 c. c. of water are ingested. The somewhat unpleasant metallic taste of urea can be disguised by a few drops of tincture of orange or by orange juice. Specimens of the urine are obtained at the expiration of one and two hours. Rarely the urea produces diuresis, which is more apt to dilute the urine secreted during the first hour, hence it is better to examine the second specimen only, which should not exceed four ounces in quantity. A percentage of urea above two is indicative of fairly efficient function; the higher the concentration the more favorable being the result. On the other hand, percentages less than two show functional impairment.

This test is used extensively in England, and has given satisfactory results. While it lacks absolute accuracy owing to the slightly varying rate of absorption of urea from the intestines, which depends somewhat upon the emptying time of the stomach, this detracts little from its value as has been proven in thousands of cases.

Other tests of kidney function might be mentioned, but it is felt that those which have been considered are among the most reliable and are well suited for use in general practice. Renal function tests should be resorted to more frequently by the general practitioner in an attempt to diagnose incipient disease, for the successful management of nephritic conditions depends largely upon early recognition. Lastly, under no circumstances should these or any other laboratory methods replace a thorough clinical examination.

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Stomatology in France in 1925

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This article has a modest and unpretentious aim: that of reviewing as briefly as possible what French stomatologists have been doing for the past few months (October, 1924, to October, 1925) and of deducing some remarks of a general order leaving aside all questions of professional politics. These are in general some reminiscences and communications presented, either before the Society of Stomatology of Paris, whose president is Dr. Herpin, or before the Annual Congress of Stomatology of 1924, whose president was Dr. Chompret, president of the A. S. I., and in 1925 presided over by the writer of this article; the next congress will be presided over by Dr. Sauvez. These remarks have been published for the most part in the *Revue de Stomatologie*, directed by Dr. Nogué, sometimes in other professional journals (the *Semaine Dentaire* for instance). The special theoretical and technical material is vouched for by the Ecole Française de Stomatologie, whose director is Dr. Bozo.

A list of the principal contributions follows:

A. *Normal anatomy.*—Professor Retterer: Researches on the structure and evolution of teeth of the wild boar. Herpin: Note on the evolution of dentine and enamel. Duchange: Study of the topographic anatomy of the perimaxillary regions (personal procedure for regional anesthesia).

B. *Pathological anatomy.*—Delater and Bercher: Tumoral complications of septic paradental foci. Crocquefer: Paradental granules and cysts. Retterer: Structure of the gum in some pathological conditions.

C. *Physiology.*—Marcel Darcissac: Mandibular physiology and artificial teeth (important work which has led its author to the construction of a new physiological articulator of an ingenious nature).

D. *Dental caries.*—Faugin Fayolle: Dental caries: problems, facts, hypotheses. Jules Ferrier: Deep lying causes of dental caries: heredity, constitution; dental caries and morbid predispositions. J. Tellier, Romey and Beyssac: Teeth of the tuberculous: experimental, clinical and therapeutic remarks.

E. *Alveodental pyorrheas: pathogenesis and treatment.*—Béliard: The retention prothesis; prothetic treatment of pyorrhea (1924); treatment of pyorrhea by retention bridges (1925). Rousseau-Decelle: General remarks on the treatment of alveolar pyorrhea. Fichot: Medical and vaccinal treatment. Monier: Surgical treatment. Psaume: Treatment through physical agents. Béal: Remarks on the treatment of alveolar pyorrhea. Lebedinsky: The grand

pyorrheal syndromes. Chateau: Mechanical theory of the progressive alteration of a pyorrheal tooth; therapeutic consequences; treatment by prothesis and supraocclusion. Duchange: Note on local vaccination for alveolar pyorrhea. Darcissac and Legrain: Vaccinotherapy for alveolar pyorrhea through a culture fixed in the vaccination incision. Saidman: Use of ultraviolet ray lamps in the treatment of the pyorrheas.

The papers presented at the Congress of Stomatology of 1924 and of 1925 on the treatment of alveolar pyorrhea were all noteworthy and the discussions assumed a fullness indicative of their importance. Two of these, however, warrant our special attention. First, Béliard's report, presented in 1924 and discussed in 1925, and accompanied with a demonstration by the author of retention bridges and their effects that merits admiration. But it is the report of Fichot, of Clermont Ferrand, that to my mind shows the best work. It is at once original, and also truly critical beyond question.

It seems to be the belief in foreign lands, and particularly in America (1), that the vaccinal treatment of alveolar pyorrhea has been accepted and is employed by the majority of French practitioners, and considered as the treatment indicated in the great proportion of cases, and ordinarily, if not always, followed with favorable results. This is not the case. Even if it is so in the case of several thousand odontologies free from infection, all true stomatologists are far from accepting it as conclusive.

The chief merit of the work of Fichot is that, on the basis of the most perfect scientific considerations possible, he discusses and presents individual indications or those related to all the therapeutic procedures, medical or vaccinal, and shows us once more that the treatment of alveolar pyorrhea is much more a question of medical diagnosis than of technical procedures whatever they may be.

F. *General pathology.*—Rousseau-Ducelle: Remarks on the probable rôle of the sympathetic endocrine system in buccodental pathology. Ureteral and ovarian influences. Frey: Rachitism; maxillaries and teeth. Watry: Rachitism and maxillar malformations (clinical study). J. Tellier: The periodontium; mixed tissue in conjunction with epithelial conjunctivitis. Anatomical, clinical and therapeutic aspects.

G. *Studies on sepsis of the mouth and teeth and focal infections.*—Worms and Becher: Ocular affections of dental origin. (An important work, well conceived and studied, with very interesting conclusions as to the pathogenesis of these symptoms, followed by their treatment). Béhaigue: Major neuralgias of dental origin. J. Tellier: Buccodental sepsis and endocarditis. Lebidinsky: Pyophagia—complications and treatment.

H. *Special pathology.*—Bercher and Krivine: Lower subcondyle fracture. Chompret and l'Hirondel: Migratory abscess of the lower vestibule (or vesicle?) or buccomaxillar abscess. l'Hirondel: Actinomycosis of the face. Merville: Osteomyelitis of the lower maxillary. Thésée: Two cases of osteomyelitis of the lower maxillary in the region of the chin, resembling an infection of fusospirilliform symbiosis. Chompret: A case of molar temporarily enclosed. Herpin: Concerning inferior prognathism. Dufougère: Gangrene of the soft parts following the use of certain translucent cements perhaps to be avoided? Gournouec: A case of elephantiasis of the lip. Thésée: Double epithelioma of the lower lip in a young man. Troude and Pacaud: A case of epithelioconjunctival epulis. Bloch: Supernumerary teeth. Thibault: Note on a case of aphthous stomatitis. Ginestet: Ulceromembranous traumatic stomatitis. Lacronique: Gingivoalveolar trophoinfectious reabsorption.

Let us emphasize also: Raison: Pathology of the salivary glands; congenital absence of the parotids; malformation of hereditary syphilitic origin. Gougerot: Tuberculosis and elephantiasic nocardiosis of the mouth. Duchange: Fractures of the jaws in practice.

I. *Surgery of the mouth.*—Monier and Nodine (of London). Boisson and Polus: Surgical treatment of alveolar pyorrhea. Leclerc and Rodier: Alveolar excisions, presented by surgeons from the Paris hospitals. Veau: Harelip: technic, statistics, results (excellent paper). Moure: The principles of tubular grafts in the repair of the lips and of the chin (splendid results of surgical reconstructions of gross mutilations). Dufourmentel and Darcissac: Deformed noses and their surgical and prothetic treatment; total reconstruction of the lower maxillary. Dufourmentel: Recent observations on temporal maxillary ankylosis, secondary to infections of dental origin.

We owe special thanks to Dr. Herpin, president of the Society of Stomatology, for having interested leaders in general surgery in the works of our professional organization.

J. *Orthodontia.*—Izard: Transverse maxillary expansion in dentofacial orthopedics; (personal work and criticisms of a remarkable nature). P. Robin: Eumorphic treatment (presentation of a large number of patients; remarkable results following the use of the method of the author). James Quinteroc: Dislacement of roots in the vestibular sense in the course of dentofacial orthopedic treatments, with presentation of models of excellent results.

K. *Protheses.*—Guilly and l'Hirondel: Retention with complete appliances. Château: Alveolar pyorrhea. Béliard: Conception of the fixed dental prothesis according to the laws of mechanics and of clinical facts. Marcel Darcissac: Surgery of the mouth and physiology, rational mounting of artificial teeth by the physiological method; contribution to surgical prothesis of the medial portion of the face. *Ibid.* with Flipmann and Dubois: Demonstration of dental and maxillofacial prothesis (presentation of patients and of apparatus—fine results of the ingenuity of Dr. Darcissac and his collaborators).

L. *Experimental medicine.*—Kritchewsky and Seguin: Unity of buccal spirochetes; first researches on chronic infections of the soft parts and of the apex. A work of the same authors entitled the Importance of Acidophilous Bacteria in Paradental Affections should have been presented at the Congress of 1925, but Dr. Kritchewsky died during the Congress. We here pay tribute to his memory. Laudète and Mayoral: Bacteriotherapy in odontostomatology.

M. *General and special therapy.*—Treatment of alveolar pyorrhea: See above. Ruppe: General re-

view of the treatment of penetrating caries. Pitsch: Treatment of infected teeth. Lacronique: Remarks on the surgical treatment of infectious paradental foci. J. Tellier and Beyssac: Preventive odontomy. Duquet: Late reimplantation. Ginestet: Two cases of persistent hemorrhage with dental evulsions; treatment and etiology. Faugin Fayolle: Rapid treatment with bismuth. Duchange: Trepanning for apical resection; note on vaccinotherapy for buccal and paradental affections; fracture of the jaws in practice (Admirable book, the most important in existence on this subject). Lemaître: Fixed drainage for cancers of the jaws at their outset. Dieulafé: Treatment of epithelioma of the buccal cavity with radium.

N. *Anesthesia.*—Bercher: Studies of regional anesthesia; demonstrations of anesthesia of the masseter muscle. Puig: On masseterine anesthesia. Duchange: Note on the use of sulphate of magnesium in local anesthesia; anesthesia of the trunk of the inferior maxillary nerve.

O. *Physical procedures; technic.*—Cièszinski: Exact intrabuccal radiography of the teeth. Bretton: Presentation of radiographs. Husnot: Remarks on amalgams.

P. *History.*—Bloch: Taveau. Boissier: Dental science in old Castile in the middle of the sixteenth century. Two amusing, witty essays, and at the same time suggestive and instructive as to historical events, men and theories in our profession.

Q. *Education.*—M. Morineau showed an interesting film on the preparation of cavities in caries. Numerous demonstrations were given in the course of the Congress at the French School of Stomatology and in the stomatological services of the Paris hospitals, particularly by Pouroy, chief of the maxillofacial service of the Military Government of Paris. At the School of Stomatology, the faithful librarians of the school and of the Society of Stomatology, Bloch and J. Puig, bore witness to their tireless devotion by putting at the disposition of visitors professional works and anatomical and pathological collections, to the great benefit and instruction of all. May we be permitted to add that the problems of the general tendencies of our profession have also been studied in an Assembly (Syndicate of French Stomatological Physicians), of which the presidents were in 1924 and 1925 respectively P. E. Gires and W. Pietkicwicz.

The simple conning of this list suffices to show the tendencies of stomatology in France. It is interesting itself more and more in everything that touches its anatomical and clinical domain, and forcing itself to put in practice methods of work that connect all the medical specialties with general medicine and which consist, as has been indicated by Professor H. Claude of Paris in regard to a specialty other than ours: 1. In applying to stomatology methods of observation and research used in general medicine. 2. In establishing on broad biologic standards new conceptions of buccodental maladies and their complications. 3. In developing standards of general and special hygiene so that new ideas may be the results of all these conditions.

It would be easy, if our space were not limited, to cite numerous typical applications. Apropos of the treatment of the dental caries (and the word should be used in a plural rather than in a singular sense), indications should be more and more based on medical clinical observations and experimentation. Each case of caries is individual; why do one or more teeth become affected with caries? A local and general diagnosis should be made for each patient. The procedures in disinfecting the cavities in caries, the length of the treatment, are variable according to the nature of the species of bacteria found (aerobic or anaerobic). Each case demands a special local treatment, a particular general treatment.

The same rules must apply to the treatment of alveolar pyorrhea—to the precautions which should be taken, from the stomatological point of view, before major surgical intervention,—to all the cases of orthodontia, where the esthetic result can be only a secondary consideration—to the discussion of prothesitic indications—in the choice of therapeutic procedures and the technic to use with patients afflicted with affections of the circulatory, respiratory systems, etc.

In brief, the general tendency seems to be to augment more and more intensively general medical instruction, in order to gain in the first place, and then to develop what we may call, speaking properly, "a stomatological state of mind," which we will define in a few concise sentences; it is well understood that the stomatologist must possess a special technic in a very high degree; but the acquisition of this technic is not the end of his professional education, it is only a means, and not an end in itself. To define this "stomatological state of mind" let us repeat here what we said in opening the Congress of Stomatology in 1925 at Paris: "It is a point of view, a way of seeing, a special way of thinking which makes us always on the watch to attach the object of our labors to general medicine, to utilize appropriate technical methods; it is a mental attitude that makes us think in a particular fashion, as one thinks physiologically, anatomically, pathologically. To think stomatologically is to think as a physician who examines the problems which present themselves to him with mental habits with which he is impregnated through his medical habits;" to study the relations that exist or can exist between these problems and their possible consequences in the domain of medical, hygienic or social knowledge; when we have the stomatological state of mind, "the practice of our profession takes in our eyes a wholly new aspect; knowledge gives assurance and confidence. We see from then on, in all the acts of our professional life, the medical standard everywhere imminent, but invisible to the eyes of the uninitiated. If we think stomatologically, then medically, everything is related in our minds, and the phenomena which we observe in our daily professional practice are explained."

It is through the acquisition alone of the stomatological point of view that we shall contribute to the development of prophylactic hygiene and preventive medicine. (Charles H. Mayo). Objection may be made that the ideal is intimate collaboration, the symbiosis of physician and stomatologist. This is perhaps true elsewhere than in France, although I am not at all convinced. But with us the education in

stomatology of the physician is practically nil, and it will be a long time before it will be otherwise. It is necessary, in order that the stomatologist do his social duty as we understand it,—it is necessary that he have a medical education, if not more, at least equally as extensive as any other physician; it is necessary that he be permeated at one and the same time with the stomatological and the medical point of view in the highest degree in order to study and bring into relationship the numerous and agonizing affections of the mouth and teeth with general pathology.

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Treatment of Diabetes—Present Status Outlining a Rational Regimen

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With the addition of insulin to the medical armamentarium there has been added one of the most valuable and specific measures in the treatment of diabetes. Though it had long been known that the hormone secreted by the islands of Langerhans of the pancreas was the internal secretion that governed carbohydrate metabolism, and means of obtaining it had engaged the attention of researchers for the past thirty years, the apparently insurmountable difficulty of separating it from the toxic alkaline external secretion of the pancreas was accomplished by Banting and Best in a series of brilliant experiments that do not admit of discussion here.

Briefly, insulin, as the hormone was named by the discoverers, is the active principle of the secretions of the islands of Langerhans of the pancreas in living animals. Small quantities have also been found in other organs and fluids of the animal body, and its recent demonstration in plant life leads to the belief that it has a widespread distribution through both the animal and vegetable kingdom. At first the product experimentally was crude and only obtained in small quantities. As a result of intensive experimentation, insulin today is a refined product produced in large quantities from the glands of adult slaughterhouse animals and its dose standardized accurately by biological assay. It is a clear, colorless, watery solution, sterile, put up in ampoules of five c.c. each, each c.c. containing ten or twenty units as indicated on the label.

In order to produce an appreciable physiological effect it must be introduced parenterally. If given by mouth, it is largely destroyed by the digestive juices before its absorption takes place and, so far, no means to overcome this disadvantage are in sight. This accounts for the failures obtained in pancreatic extract or whole gland by mouth. Likewise, it is impotent when given by nasal spray or by rectum. It therefore can be administered intravenously, or subcutaneously. The intravenous route is chosen only when rapid action is desired, as in severe acidosis or coma. By way of the blood stream its action is fleeting. The subcutaneous route is the one of choice, thus the extract is slowly absorbed and acts more slowly, and more nearly approximates the normal absorption in health.

The physiological effect following the introduction of insulin into the system is the prompt utilization and distribution of carbohydrate in the system as evidenced by blood sugar reduction, with a corresponding increase in the respiratory quotient and a reduction or disappearance of the urinary sugar. The disappearance of the sugar is accounted for by a marked increase in liver and heart glycogen. This carbohydrate stabilization is peculiar not only to diabetics, for insulin also controls the hyperglycemia in animals caused by asphyxia, carbon dioxide poisoning, injection of adrenalin and that due to ether anesthesia experimentally.

It has also been ascertained that the organs, notably the liver, show a decrease in fatty acid content following the injections of insulin into the diabetic patients or animals rendered diabetic. There is a coincidental amelioration of the major symptoms of the disease and the patient becomes subjectively optimistic and in a state of wellbeing. Where edema exists it rapidly disappears, probably due to the equilibration of the water balance of the system. The tendency to acidosis and coma are likewise overcome.

Given in overdose, the symptoms are characteristic and sometimes alarming, even causing death unless the specific antidote, sugar, is promptly administered. The typical reaction is initiated in one half to three hours after the overdose administration. As the blood sugar falls to a low level (usually below eighty mgs.) the patient experiences a sense of weakness and drowsiness; perspiration and muscle tremors set in. There is hyperpnea with a full bounding pulse. In the severer reactions this may be followed by delirium, coma, cardiac depression and death. This train of untoward symptoms is known as the hypoglycemic reaction and can be readily overcome by prompt administration of sugar by mouth in assimilable form. When the patient is already unconscious, while intravenous sugar, two hundred or three hundred c. c. of a five per cent. solution, is being prepared, one c. c. of adrenalin, one to one thousand solution, should be injected intramuscularly. This helps to mobilize the sugar from other tissues and is the only other remedy that aids in overcoming the hyperglycemic reaction.

The dose of insulin is governed by physiological assay. Arbitrarily, the discoverers propose to call the unit a third of the material necessary to cause convulsions by hypoglycemia in a two thousand gram rabbit previously fasted for twenty-four hours. It has been established that one unit will account for one to two grams of sugar in the diabetic. Our figures,

especially in one case of a severe diabetic, would tend to show that this is a variable quantity so that sometimes a single unit will account for no more than a half gram of sugar.

Therapeutically, insulin, injected subcutaneously, will be slowly absorbed into the blood stream and act for a period of six to twelve hours, when it is either entirely neutralized or excreted by the kidneys. Thus, if one watches the blood sugar curve, it is interesting to note that its maximum action is reached within three or four hours after administration and then gradually as its effect wears off the blood sugar begins to rise and again within twelve hours reaches the same level as before insulin administration. It is obvious then that one or more injections of the extract is necessary a day when insulin is added to the diabetic regimen. Too large a single dose will surely bring on a hypoglycemic reaction. It is therefore important to balance the quantity of insulin injected with the food ingested.

An erroneous belief has arisen among some since the discovery of insulin that dietary measures were no longer necessary and that injections of the extract would take care of the diabetic disorder. I cannot too strongly emphasize the uselessness or danger of such negligence. It is probably fortunate that insulin was discovered after brilliant researches such as conducted in this country by Allen, Joslin, Wilder, Schaefer, and others, established definitely the relationship of protein and fat to the diabetic disorder and the harmfulness of total overfeeding in this disease and, what is most important, the relationship of focal infection to diabetes.

Thus it has been shown that fifty-eight per cent. of the protein intake can be used as glucose by the body, that protein causes an increase in metabolism because of its specific dynamic action. In a large quantity it embarrasses the organism in its attempt to utilize sugar. The determination of the nitrogen balance is therefore important in diabetes. Similarly, to avoid acid intoxication, the fat and carbohydrate intake must be carefully gauged to avoid incomplete fat combustion and a resulting production of ketones. As to overfeeding generally, an added burden to an already inadequate pancreas will further embarrass it. There is no excuse at present for overfeeding when definite caloric requirements have been established and are available for all adults.

Using insulin in diabetes is mimicking the normal pancreatic function. In the healthy individual the blood picks up insulin from the islands of Langerhans in proportion to meet the needs of the food intake. Insulin is meted out to the system therefore slowly and if we are to imitate Nature in administering insulin, it at best will be crude, with all the precautions possible. But if these known precautions, viz., the quality and quantity of diet ingested and the relationship to insulin administration, are disregarded, either serious reactions or little result will be achieved. The use of insulin in properly managed diabetics therefore will result in reestablishing a normal metabolism and consequent cessation of further tissue degeneration, with return to normal body function both subjectively and objectively, and obviously will result in resting the diseased pancreas in allowing it to recuperate as fully as possible.

Insulin has a specific value, therefore, in all cases of diabetes, but not all patients require insulin. The use of insulin is indicated in the following four classes of diabetics:

1. It is imperative in all cases complicated by acidosis and coma, by infections, intercurrent diseases, and in contemplated surgical procedures.

2. In severe diabetes with low sugar tolerance where reduction, if at all, of the hyperglycemia can only be accomplished by very low diet and frequent fasts and low body weight with physical incapacity.

3. In the moderately severe cases the use of the extract is optional where dietary restriction, plus rest, brings the blood sugar curve down and dispels glycosuria. The advantages of insulin in these cases are that it reduces the rest period and allows of an easier pancreatic recuperation when the burden is removed from that organ.

4. In the mild cases, where the blood sugar is slightly elevated above the normal, the symptomatology and elevation of blood sugar can be easily relieved by proper dietary restriction without the use of insulin. This is especially true of fat diabetics.

AMOUNT AND FREQUENCY OF INJECTIONS

The first few subcutaneous injections may give the patient a slight local, stinging pain; later the patient accommodates himself and rarely complains. An ordinary hypodermic syringe and needle with the usual precautions for sterility are all that is necessary. Many patients learn to give themselves the injections and this simplifies the administration. The number of units a day necessary for any one patient is a variable quantity entirely dependent on the sugar tolerance and diet. Thirty to forty units a day usually suffice to permit an assimilation of about 2,500 calories, provided the diet is properly proportioned.

It is wise, in order to avoid reaction due to individual susceptibility to the extract, to begin with small doses and gradually increase them. After the patient has been established on insulin it is well to ascertain his sugar tolerance from time to time and, as the pancreatic function begins to return, the dose is gradually diminished and the number of injections per day lessened so that in many cases where the pancreatic pathology is not already far advanced, we can hope eventually for enough return of function normally so that the patient may eventually need no more insulin injections.

Insulin is usually administered about twenty minutes before meals and, if a single dose a day is to be given, preferably before breakfast. The advantage of the morning dose is its continued action through the active part of the patient's day. A large single dose obviously cannot take the place of two or three small ones because of the danger of hypoglycemic reaction. Administration before bedtime should be avoided because when a reaction occurs during sleep it may not be recognized and thus endanger the patient's life. When more than one dose of insulin is to be used per day, the day's caloric intake of diet should be evenly proportioned to meet the injections otherwise a hypoglycemic reaction might result if too little food is given at any one meal to balance the insulin injected.

At the Mt. Sinai Hospital we have established a rational plan of diabetic management so that, on admission, a patient can be immediately cared for by

any house physician. In order to establish a working routine it is necessary:

1. To establish a series of wellbalanced diets so that there would be a balance between the carbohydrates and the fat in the twenty-four hour intake to avoid the possibility of acidosis; to this end we established five diets, the first of about 400 calories, the second 800 calories, the third 1,200 calories, the fourth 1,600 calories, and the fifth 2,000 calories. The foods are so arranged quantitatively that only the ordinary kitchen utensils are necessary to measure them, the kind and quantity of foods plainly stated so that no knowledge of dietetics is necessary to understand how much food and the kind of food is to be taken for the day.

2. For example, diet 3 detailed below, typifies its simplicity and the ease with which it can be carried out in any kitchen. Aside from these routine diets an instruction sheet is also provided which gives the patient a greater variety of foods having the same caloric value, and also detailed recipes for making diabetic preparations. In this sheet the patient is also informed of the food values of articles of diet that are usually present in a household.

DIABETIC DIET SHEET 3

Carbohydrates, 60; protein, 45; fat, 90; calories, 1,230; sugar value, 96; ketogenic antiketogenic ratio, 1 to 1.2.

Breakfast: One half grapefruit, one half cup (scant) cooked oatmeal, one egg, one and one half tablespoonsful butter, three tablespoonsful sweet cream, bran biscuit, coffee with saccharine.

Dinner: Broth (any quantity), two cups five per cent. vegetables, one half cup ten per cent. vegetables, one and one half ounces cooked meat, one slice (thin) Kolb's bread, two tablespoonsful butter, one tablespoonful sweet cream, coffee or tea with saccharine.

Supper: One cup five per cent. vegetables, one cup 10 per cent vegetables, one egg, one Diaprotein biscuit, one tablespoonful butter, one tablespoonful sweet cream, coffee or tea with saccharine.

ROUTINE TREATMENT IN THE HOSPITAL

1. On admission to the Mt. Sinai Hospital the patient is thoroughly examined to determine complications such as acidosis and intercurrent disease.

2. All possible foci of infection sought for with a view to eradication.

3. The patient is placed on one of our basic caloric maintenance diets (usually 800 calories, diet 2, or 1,200 calories, diet 3).

4. Meanwhile the patient's metabolism is studied from a laboratory viewpoint as well as a routine laboratory measure.

5. His tolerance for carbohydrates is then established by estimating the amount of glucose excreted in the urine while on diet. If it is found after three or four days on a given diet that the carbohydrate tolerance is lower than the individual need of the body and the patient already is a little below weight, then his basal diet that he was placed on is continued and insulin is added to the régime to make up for the glucose thrown out in the urine; for example, figuring that one unit of insulin roughly will take care of two gms. of sugar, the patient is then placed on one unit of insulin for every two gms. of sugar thrown out in the urine. This is continued for several days and the insulin either reduced or increased in order to cover the basic diet that the patient is ingesting.

Blood sugar estimation should be done once a day or once every other day before breakfast until the blood sugar constantly remains within the normal range. The dose of insulin is then gradually reduced, maintaining the patient on the same diet or insulin might be stopped for several days and the patient's sugar tolerance can then be recognized and the dose of insulin either reduced or entirely stopped. It has been my experience that in the milder cases patients who are overweight, when placed on a basal maintenance diet, usually respond promptly without any necessity for the use of insulin.

6. If the patient is admitted to the hospital in a state of acidosis, he receives preliminary carbohydrate, low protein and no fat diet with insulin until he is freed from this complication, when he is treated in the routine way as detailed above. If the patient reaches the hospital with impending coma or in coma, insulin in a large dose (thirty or forty units) is at once administered and doses repeated until the blood sugar falls within normal range and the alkali reserve is restored, and other routine measures including alkali, stimulation such as digalin and adrenal, stomach lavage, lumbar puncture, etc., are given. After recovery from this complication he then receives treatment as outlined for other diabetics.

7. If a patient has an intercurrent disease like tuberculosis, or pneumonia, or nephritis, it is best to use larger doses of insulin and a more liberal diet in order to sustain the patient during this emergency or as, for example, in tuberculosis, where nutrition and gain in weight are important factors in controlling the intercurrent disease.

8. Patient's weight is recorded at three or five day intervals to ascertain how much gain occurs on basal diets, and upon leaving the hospital, it is wiser to slightly increase the dietary allowance (say twenty per cent.) in proportion to insulin doses allowing for the patient's increased activity. This will prevent the possibility of untoward reaction from insulin, and if the patient excretes a trace of sugar and runs a high normal blood sugar in consequence, it will do him no harm. The patient is also instructed to carry with him candy or sugar at all times so that he may promptly administer the antidote if an untoward reaction occurs.

INSULIN IN CHILDREN

Children above ten years of age receive the same routine as adults. In younger children it is harder to estimate basal maintenance diet or caloric requirements, since children are active. Young children require at least one half the food allowance of adults with relatively larger proportions of protein and sugar. Because of their low blood volume, smaller doses of insulin are necessary than for adults. Children have a greater tendency to acidosis and, because of the small blood volume, sometimes the blood sugar drops abruptly after insulin injection and they therefore require more careful watching.

In general the rule applying to adults, namely, beginning small doses at first and gradually feeling one's way with insulin diet balance, should be more rigidly emphasized in children. Lastly, insulin promises to be of value in other conditions; notably, as

pointed out by Thalheimer, in apparently nondiabetic acidosis. It is encountered in children and postoperatively frequently. Here sugar administration intravenously, plus insulin, brings about cessation of vomiting, avoiding exhaustion and undernutrition. In the hospital we have also used it with encouraging results in cases of undernutrition due to various nondiabetic causes as, for example, the vomiting associated with brain tumor and stomach carcinoma.

After all, the treatment of diabetes must continue in the hands of the general practitioner because we have more diabetics today than ever and because, with the improved methods of treatment diabetics live longer. From my experience in outpatient and private diabetic treatment, I can absolutely refute the assertion that it is necessary for a patient to be hospitalized in order that insulin and dietary measures be carried out successfully. In outpatient and private practice we estimate tolerance for carbohydrate by placing the patient on a given diet and estimating how much sugar is then thrown out into the urine on that diet. By either subtracting that quantity of sugar from the diet of a patient who is overweight, or adding insulin to the regimen to take care of this excess sugar in individuals below weight, excellent results are obtained.

Patients have their urine examined either once a week or once in two weeks and the blood sugar estimated once in every two weeks to determine increased tolerance, and they are also weighed as regularly to maintain weight levels. This routine can be followed out in the office of the general practitioner with ease.

1204 Spruce Street.

Alcoholic Nerve Block for Pain in Malignant Diseases*

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The control of pain in malignant diseases has always been one of great concern to the attending physician. The incessant employment of morphine in the care of these patients has serious disadvantages which may be summed up as follows:

1. Small doses of morphine afford little relief.
2. The perpetual use of morphine quickly raises the tolerance to the drug. As a result even large doses often fail to ameliorate the pain.
3. Morphine even in small doses may actually hasten death in the extremely weak and debilitated patients.
4. The drug so dulls the intellect that both the family and the patient are denied even the companionship of the last days.
5. Opiates are especially dangerous in diseases of the lungs for they greatly reduce the cough reflex. As a result the secretions are often brought as far as the bifurcation of the bronchi and are dropped back into an unaffected area. Thus a terminal pneumonia is produced.

The cases here reported have been treated by alcoholic injections into the nerve supplying the diseased area.

Case I.—H. P., male, aged twenty-six. This patient had a neoplasm of the lung, the diagnosis being established both by physical and x ray examination. The pain, which began September, 1924, was localized in the left axilla. He described it as being burning and boring in character. The slightest movement aggravated the distress. Even a light touch to the skin produced unbearable anguish. The pain had been present constantly both day and night, with no relief until the date of our treatment. Five months after the onset he complained of pain in a new area in the region of the lower part of the left scapula. He described it as stabbing and sticking in nature, and as a result found it impossible to raise the left upper extremity. Any movement whatsoever greatly aggravated the distress. He found it practically impossible to rest on his left side. This pain had persisted for a period of four months before treatment was instituted. Physical examination showed two dermatomic areas of marked hyperalgesia on the left side. One area involved the skin segments supplied by the second to the fifth dorsal spinal nerves. Another area extended from the seventh to the eleventh spinal nerves. Slight pressure over the intercostal spaces supplied by these irritable nerves produced unbearable agony. Even the application of a stethoscope to the chest wall was intolerable. Three cubic centimetres of a sixty per cent. alcohol solution were introduced paravertebrally into the intercostal nerves supplying the hyperalgesic skin areas. The accompanying diagram shows the intercostal nerves injected (Fig. 1). The patient's condition after the injection may be summarized as follows: The hyperalgesia in the affected zones became markedly lessened. The unbearable pain induced on pressure over the intercostal spaces was greatly diminished. The application of a stethoscope to the chest wall elicited no discomfort. For the first

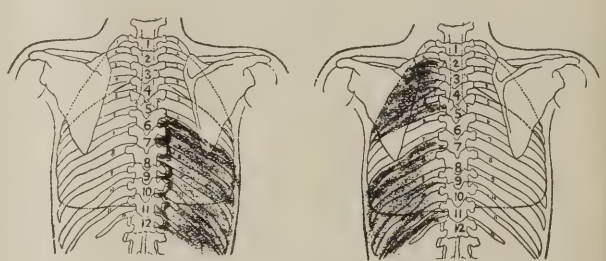

Fig. 1.—Case I. Showing the intercostal nerves injected.

*From the Cancer Division of the Montefiore Hospital, New York City, Dr. G. Gottesman, Surgeon-in-charge.

time in months he was able to sleep on the affected side. He was relieved until the day of his death, a period of thirty-three days.

Case II.—R. R., female, aged forty-eight. This was a case of carcinoma of the breast with very severe pain produced by pleuritic involvement. In another article a preliminary report was made in which five cases of severe pleuritic pain in pulmonary tuberculosis were treated with paravertebral injection of alcohol. This patient was treated similarly.

The treatment of this patient was based on the following anatomical and physiological facts. The upper six intercostal nerves supply the upper parietal costal pleura. The lower six send their intercostal fibres to the lower parietal costal pleura as well as the parietal pleura of the diaphragm. Disease, therefore, in the costal parietal pleura will convey its effects in the form of pain to the chest wall. The site of reference will depend upon the intercostal nerve impinged. With the blocking of the nerves supplying the diseased pleura, pain stimuli would be prevented from reaching the sensorium.

Fourteen years before admission the patient had a mastectomy done on the right side for malignancy of the breast. Several months later a severe, sharp, stinging pain developed in the lower right chest. This pain persisted on and off for several years. Three years ago there was another exacerbation of pain. Eight months ago the pain became intolerable. It was sharp and sticking in character, and with the sticking pain there was present a burning sensation. The pain was localized in the posterior and anterior lower chest and down the loin and abdomen on the right side. She then first noted a boring pain over the upper dorsal spine which gradually increased in severity and had become so severe that she could not recline on her back. Mere palpation of the four lower ribs anteriorly induced intense pain. The vertebræ showed no x ray evidence of metastases. The right chest was aspirated and seven hundred and fifty cubic centimetres of a clear fluid were removed. Tumor cells were found in this fluid. Physical examination showed a level of hyperalgesia extending from the sixth to the twelfth dorsal segments. A paravertebral injection was performed. Each root was injected with three cubic centimetres of an eighty per cent. solution of alcohol. Immediately following the preliminary injection of a one per cent. novocaine solution, the pain disappeared. Pressure and fist percussion elicited little pain. Following the injection with alcohol she has been relieved to the present date, a total of fifty-eight days. She is now able to lie on her back. Movement elicits no pain. Heavy palpation or fist percussion elicits little discomfort.

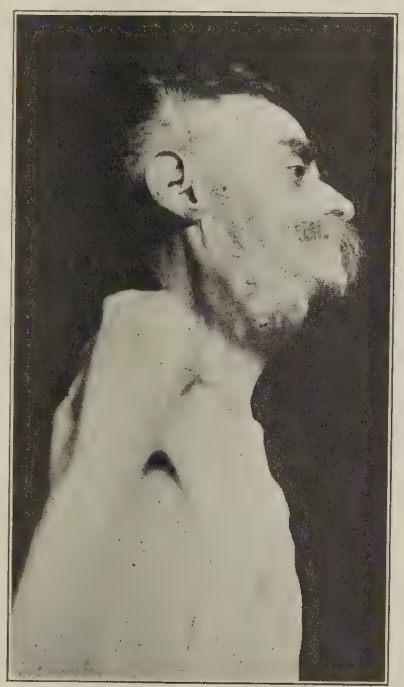

Fig. 2.—Patient in Case III.

Case III.—A. S., male, aged fifty-eight. This was a case of carcinoma of the tongue with metastases and extensions to the floor of the mouth and the neck. The following anatomical and physiological facts were the basis upon which this patient was treated. The inferior maxillary nerve, a branch of the trigeminal, has both sensory and motor components. The sensory fibres arise from the lower anterior portion of the Gasserian ganglion and supply the skin over the side of the head, the auricle of the ear, part of the external auditory canal, the lower portion of the face and lip, the mucous membrane of the mouth, the tongue, the lower teeth and gums, salivary glands and the temporomandibular articulation. The mandibular nerve enters greatly into the supply of the salivary glands. The parotid gland is supplied in part by the sensory fibres of the mandibular nerve through the auriculotemporal branch. The submaxillary and sublingual glands are supplied to a great extent by the lingual nerve, the large branch of the mandibular nerve.

At the onset, the patient complained of severe neuralgic pains in the right occipital and temporal regions. He was seen by the dentist, who removed all the teeth on the right side of his mouth, both upper and lower. The dentist told him that he had "proud flesh" under the tongue. One month later two white spots appeared at the root of his tongue, which were soft and which did not bleed readily. These were cauterized but reappeared the next month and were pin point in size. Eight months after the onset, the patient noticed an enlargement on the right side, involving the lower jaw and neck. This swelling became progressively larger and was accompanied by a severe burning pain in his throat. X ray treatment afforded him no relief. The pain had become so intense as to necessitate the use of large doses of opiates and so severe as to force him to limit his diet to fluids. The diagnosis made was carcinoma of the tongue with metastases and extensions to the neck. Physical examination showed the following: The tongue deviated to the right and great difficulty was experienced in protruding it. There was a large mass on the superior and posterior aspect of the tongue. In the right submaxillary region there was found a large, nontender, nonremovable mass, extending anteriorly beyond the midline and posteriorly behind the sternocleidomastoid muscle. His mouth was constantly filled with saliva and he drooled incessantly.

Following the injection of the right inferior maxillary nerve with five cubic centimetres of a sixty per cent. alcohol solution, great relief from his symptoms was obtained. His pain became markedly less so that the amount of morphine required could be materially cut. His sputum became materially lessened and more viscid in character. He was relieved for a period of fourteen days before he died.

A Psychoanalytic Introduction to a Study of the Conduct Disorders of Lethargic Encephalitis*

With Outline of Plan for Psychosocial Reconstruction

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(*Concluded from page* 647)

At this point the child said she was going to try to do what was right to get well. The meaning of many of the coarse words she used was explained, and this also seemed to be a help for she had no idea of their real import. She slowly developed insight and spoke somewhat pathetically: "I didn't get along well with the children today, they made me mad and I called them names, but I did not get as mad as I used to; I am getting better, ain't I? I am trying to do what you tell me." On one occasion following a mild protest against ordinary routine directions she looked rather hatefully at her instructor and declared that she would do as she pleased. She then began to cry and said, "You don't seem to understand me—I don't mean to be this way—I don't mean to do these things. I love you and I hate you—how can that be? Was there ever such a thing?" The child gained considerable control over her impulsive acts and seemed capable of putting into operation the insight she had gained from her general training. These periods of insight gradually extended and deepened under the pacific guidance and comprehending attitude of those in charge.

Psychoanalytic reeducation, but not psychoanalysis, was undertaken in this case, but it is hoped that psychoanalytic procedure will be available to other cases of this type in future, in order to gain a better understanding on the part of the patient of the emotional levels to which he has regressed under the onslaught of this destructive disease. The case is given as an example of what may be accomplished when a wise and gentle training is instituted and a conscious insight gained although the patient may remain unaware of the conflicts which precipitated the conduct reactions. The details of the case management are not unique but may perhaps be called the better sort of reeducation plan of treatment for such children.

Our next case is an example of the psychoanalytical approach to this problem.

CASE II.—H. P., a nineteen year old boy, well developed, fine featured, with an intelligence quotient of 106, was referred to me by the social service department of one of the large city hospitals as an unadjusted problem. The medical findings carried over a four year period can be briefly summarized: A diagnosis of lethargic encephalitis was made in 1921. At the onset of his attack of encephalitis, after a day of hard work on going to bed he noticed that he had double vision. He was enjoined to be quiet and recline in a darkened room. For three or four days and nights he remained wide awake, after which a sleep succeeded attended by a delirious coma with almost constant repetition of the words, "needles and pins." A period of nine weeks of almost unbroken sleep left no doubt of the accuracy of the diagnosis. The clinical history shows that this sickness was followed two years later by a complete character change. Physical symptoms, developed at a more recent period, are characterized by a constant coarse tremor of the left hand, sagging of the jaw, and Parkinsonian mask. The boy was returned to school after a loss of one term. Sympathetic treatment gradually built up a feeling of invalidism and evasion of duty. The sleeping spells have gradually decreased and have been replaced by loss of memory. The boy is markedly temperamental, gloomy, sensitive, impulsive and suggestible.

The successful beginning made with this patient by psychoanalysis was in a large measure due to the confidence of his family in the personnel of the institute from which he was referred, the intelligent cooperation of his mother and the narcisistic transference he was able to make to the psychoanalyst and his assistant. From the first interview the boy kept his appointments willingly and promptly and seemed not disheartened by the clear understanding that the treatment might lead only to a better general understanding of the disorder and not to personal improvement. It is interesting to note that until this case come for analysis it had been most difficult to gain the cooperation of these patients or their families; during the years they had suffered from the sequelæ of this disease, the patients had been subject to such an unending round of medical, institutional and social care that hope had failed and further therapy held little appeal.

At the time of this report, the boy had had but three weeks analysis. Inasmuch as a narcisistic transference only was possible, the phantasy method (2) was employed to reinvoke the earlier oral and anal mechanisms at their weaning periods. It was not until the phantasy method was used that the descriptive phase relating to his scholastic and musical ambitions was put aside and the infantile attitude laid bare with its surcharge of emotion. The patient's whole manner changed to a childish simplicity of tone and feeling. He again relived the period of being rocked in his mother's arms and nursing with a savage eagerness that made his body glow with warmth and exhilaration. In one analysis the patient said, "I was a delicate child. My mother would wrap me in a warm blanket and hold me close to her breast. It seems as if it were yesterday. Oh, it was just like heaven. I would pull her breast as if I wanted to suck the life blood out of her. Sometimes I would bite her nipple; it makes me feel very sad to think that I made her suffer so, yet I could not always repress the desire. Oh God, what terrible days!" One may infer from this and more extended

*Read before New York Neurological Society, February 2, 1926.

data the usual source of sadistic desires. Then came the weaning trauma and the bottle that was left with the child during the day when the mother was away. "Mother's breast was the first food I knew. I loved it so. When the time came to give it up I couldn't get used to it, I felt as if mother was going away, too, as if she didn't love me. The bottle seemed like an impostor, as if it were taking the place of mother and had no right to. When mother was away I'd hug the bottle close to me in both arms and suck the milk from it. When I had the bottle next to me, I could take milk whenever I wanted to. I had it by me all day, but it wasn't satisfying. I missed the touch of mother's breast. When it came to other food, mother would feed me; I liked it better than the bottle—she was there. She would take a spoonful of oatmeal and take it up to her lips and blow upon it—meanwhile telling me a story; that made it easier to eat. The food tasted nice as long as mother was telling a story, but when she stopped, sometimes I'd begin to cry. When she was close to me I always felt her warmth going through me—always—even now. When there was no mother, no bottle, no food —my mother would leave me on the floor and I'd build castles out of my blocks." At the close of each analytic session when the patient had retreated to these blissful states of nursing, he would fall into a profound stupor from which he was roused with difficulty. He would mumble, "Yes, yes, I hear, but can't you leave me alone for awhile. The world is so very sweet!" One gains an idea of the acute demoralization engendered at the weaning trauma, the intensive mother attachment and the difficulty of releasing himself from her in the following: "It made me feel all warm when she came into the room —her face was loving—just like an angel's. I was always lonely—I would sit on the floor and play with my blocks and little steam engine, but when she came in I wasn't lonely any more—just happy and contented—her face looked like the Virgin Mary's, and her smile and her eyes were warm and glowing. When we were in bed, she would hold me close and I would put my hand on her neck—it felt all creamy soft and I liked to touch it." When the phantasy is continued again, the patient exclaims, "Please, I don't want to go back to those little boy days, they are too painful, they prove the realization of all my mistakes and all that I wanted to be—I sat and played with blocks on the floor, all day long when mother was away. I used to build beautiful houses and imagine that my mother and I lived there in a Utopia, the kind of a land where one never has any harm befall one. I used to build houses when I grew older, and my wife lived in them, too, but always my mother. I think that is the trouble with me, I am too milkfed, too carefully protected. Perhaps if mother had let me play with boys and think boy's thoughts I would not be the kind of person I am today."

One may here note his insistent demand projected upon the mother as her fault in not letting him be a boy, etc., and still later we see the early formation of the mother as a loved object (Œdipus). The patient states:

"I first remember father sitting in a rocking chair —mother was sitting on father's lap and she was crying, he had no job. My uncle took us in—she was very sad. The baby looks up in mother's face as if to say. 'Don't cry.' Sometimes I felt angry at my father, wanted to put all the blame on him, but I afterwards realized he was trying his best. I felt angry—my mother was such a beautiful lady and so good—my father ought to try more than his best to support her and praise her. I'd pay no attention to father. I'd just walk over to mother and take her arm and caress her. She would pick me up and hug me and cry convulsively and I'd feel sorry for her. I'd sometimes feel like killing father. I remember saying to mother when father was sleeping that we should throw him out of the window and the undertaker would come and take him away."

Finally the rapid regression from fairly well controlled (psychically mastered) states to the deepest sadistic attitudes is shown in the following analytical material: "When I was five years old I was very angry at my mother because she had promised to be at the concert—then she disappointed me at the last minute. I got all heated up; the blood came to my temples; I felt like leaving the stage, but when I saw my mother everything was all right. When I am improvising music, my mother doesn't like it and stops my playing—she doesn't like it and I like it; I feel infuriated. If I surrender to the impulse I'd kill her, but I calm down right away and consider her feelings. I get all hot in a minute and walk up and down the room and have to go out in the fresh air and do something to give vent to my energy. I'm afraid some day I will kill somebody. The impulse comes when anyone arouses me. When people contradict me, when I'm sure about something; I hate to have anyone contradict me. I believe a man isn't a man unless he has a spark of jealousy in him. I went to a party recently and my best friend whom I trust implicitly took my girl friend home. I would have killed him on the spot and he is my best friend, too. The only satisfaction I would get out of choking a person would be a very bloody satisfaction. That boy in the country who teased me and made me mad—his tongue was hanging out and his face was all red—almost purple—they dragged me away from him. I have no revolver and don't keep a dagger about me, so the only way I can think of killing a person is by choking him. I hate to think about it even for a second. All my hot blood is thrilled and then the next minute I am sorry. Believe me, I never meant it (deep sigh)."

Only one session was given to the patient's love for music, which, however, gave ample indication of the possibility of sublimating a deep seated urinary eroticism into rich aesthetic expression. Only by reading the text of the original material can an idea be gained of the child's pleasure in urination. Then we find the baby "laughed and crowed with glee as the urine fell into the basin with a tinkling sound." The baby loved the noise so well that he would hold it in as long as he could so it would rush forth as loud as possible. This field of early infancy may be of great interest in the revelation it might hold of how the rhythm, pitch and rippling flow of urination might be the beginning of a delight in the myriad sound possibilities of the sensitive violin. The sadistic impulses that had played so devastating a rôle in the sequelæ of this patient's illness were pictured in a colorless tone. The boy was apparently quite unconcerned with the outbursts of uncontrolled, unrea-

soning and violent tempers. Sufficient time has not yet been available to drive the interviews down to an anal erotic level, or to discover what insight the patient might have gained during the brief period of analysis. The time has been so fully occupied in the production of new material that no attempt has yet been made to have him apply his own data for a possible modification of character; nevertheless it is evident that many of the old emotional fixations are being drained and that a therapeutic process is under way. At times there is a marked change in the masklike rigidity of the boy's expression, and the mother's statement bore further proof of changing attitudes: "He no longer spends his time quarreling with the family or sitting like a stone image talking about making away with himself. He reads books and papers now, wants a new suit of clothes and says if he can only get a job he is sure he can do something to help himself get well." The mother further states that the physical symptoms have much improved since their first acute onset and that she believes the boy will keep steadily on the mend if his interest in life can be sustained.

The boy in turn feels that much is lacking in his own adjustment and is gradually gaining insight. "I love music, but sometimes I wish I had never heard of it—all the time when I was little I kept at practice, practice. It would have been better for me if I had been allowed to run free and do the things the other boys did."

The results of these analytic sessions are by no means final, as insufficient time has elapsed to show what effect psychoanalysis might have in one suffering from a degenerative brain lesion. However, it is just possible that through the transference and new interests the symptoms may disappear for a time and give us an opportunity to build up the psyche to keep abreast of the degenerative process.

PLAN

I shall state briefly my proposition for psychosocial reconstruction of these conduct disorders following lethargic encephalitis. A well ordered home in the country should be established for a limited number of suitably selected cases. Here the proper reëducational program of care, occupational training and instruction in social behavior should be instituted. A psychoanalytic study of this acute ego neurosis should be carried out which will determine the degree and extent of trauma sustained by the ego organ of the psyche, which when determined shall be the real guide to all other systems of care and reconstruction. The total estimated cost for such experimental therapy for handling four or five resident patients under intensive analytical study and training would be between $1600. and $1800. a month. This would provide for rental of a comfortable house in the country with ample space for outdoor occupations, a middleaged couple in charge to provide the proper home background, two trainers of the companion type, a cook, houseworker, laundress and miscellaneous expenses for providing good food and good living conditions. This also includes the cost for daily analysis by trained analysts and an assistant to record the data for study.

In the absence at the present time of such a place for the study and treatment of these cases as outlined and submitted to the National Committee of Mental Hygiene and the ideal plan just outlined, undoubtedly many encephalitics under a State hospital regime could be analyzed and by the use of the parole system a modified application of normal activities could be employed as necessary and desirable. It would thus be possible to see whether a recurrence of the social maladjustments in these postencephalitic patients could be permanently removed, thus permitting normal living in the community. I may add that such an investigation of this problem upon specially selected cases is being carried out at the Manhattan State Hospital.

In conclusion we may state that in the encephalitic process a pathoneurosis is entailed in consequence of the imprisoned narcisism which fails to heal or remove the lesion and thus overflows into the whole behavior reactions of the youthful patients, making the clinical picture so pathetically classic and antisocial. While this study is no more than a preliminary communication, nevertheless our psychoanalytic investigation so far undertaken gives us reason to believe that our hypothesis is not only correct in principle but also lends much to the indication that our method of bringing about an amelioration of the state is a workable one. We admit that we are proposing a plan of analytic treatment to cover the most incorrigible and intangible types of cases from which all grades and kinds of conduct disorders shade out into those of the more or less pure transference type. In the latter, of course, the analytic task may be comparatively simple, and no more than a wise psychoanalytic reëducation may be necessary. Only time and a larger case study will prove the correctness of these conclusions. Undoubtedly the reappearance of conduct disorders when these patients supposedly recovered from their antisocial behavior are returned to the home environment, is due to the incomplete analysis of the parental identifications and the nonabsorption of these patterns of identifications into the ego. The latter is due largely not to an insufficiency of the controlling energy of the ego nucleus but to the extreme narcisism that prevents sufficient projection and adhesion of object libido to seize upon interests in the outer world, to retain it and permanently incorporate it into the total ego formation. Therefore the amount of transference and the vividness of object appeal holds the key to our therapeutic endeavor. To the means of intensifying the latter we must now address our main attention.

Finally, one may tentatively postulate upon our clinical and theoretic data that the conduct disorder of postencephalitis lethargica is an ego (narcisistic) neurosis which may be studied not only objectively and managed more understandingly than in the past, but that it is not inaccessible to psychoanalytic investigation; and to the efforts of the neurologist may be added those of the psychoanalyst, both enlarging our knowledge of organic psychiatry by mutually helpful cooperation in their respective fields.

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The Problem of the Macerated Fetus

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In spite of the increasing success attendant on the efforts of modern preventive medicine it is astonishing to note the record of the stillbirth rate. A gross rate of forty-one per one thousand as we have had at the New York Lying-In Hospital in 1924 is discouraging; nor is it any the less so to compare it favorably with a general stillbirth rate of forty-seven per one thousand for New York as a whole, or with the rate of fifty-three per one thousand for Detroit.

As an explanation of these high figures, in a measure, it is important to keep in mind the application of the term stillbirth. In this city, if a recognizable embryo is passed with the products of gestation or if a fetus be born with no respiratory effort, though its heart may be beating, a stillbirth certificate is required. In this way, an embryo of three months, or what ordinarily would be called an abortion is a stillbirth; again, a premature or a full term fetus comes under exactly the same classification. It becomes apparent then, that the mere enumeration of figures for this type has little significance, nor can it be used as a basis for comparison. Yet of all the classes of stillbirths, the greatest numerically is represented by the socalled macerated fetus. For the most part, even before labor is initiated, a good proportion of the stillbirths have ceased to live and already begun to undergo decomposition. The following table shows this strikingly for the year's work at the Lying-In Hospital (1924):

Total confinements, 5,457.

Total stillbirths 227 or 4.1 per cent.=41 per 1,000.

Total full term macerated, 94 or 1.7 per cent.= 41 per cent. of stillbirths.

Stated in another way, these figures mean that almost half of our stillbirths were probably dead before admission to the hospital. No method of treatment, no interference at this time obviously can be successful in reducing the fetal mortality. Distinctly then, in the field of preventive medicine, of pre-natal care, it is of the utmost significance to inquire into causes so far as ascertainable. Almost at once, one is struck by the discrepancy between our figures and those frequently referred to. Syphilis is by no means a common cause, this is borne out, both by the records of 1924, and also, by those of the nine months of 1925 to October 1st. The figures are almost exactly the same from this point of view, as will be seen by the following tables:

Year 1924

Macerated fetus	94
Positive Wassermann in mother	15
Negative Wassermann in mother	60
No Wassermann taken	19

	January 1, 1924, to October 1, 1924	*January 1, 1925, to October 1, 1925*
Macerated fetus	72	71
Positive Wassermann	10	8
Negative Wassermann	44	55
No Wassermann taken	18	8

Noted differently, in more than half of the cases of macerated fetus, there was no evidence of syphilis, clinically, by test or by autopsy.

Looking further into the causes the striking figure is represented by the cases occurring in toxaemic mothers; there were thirteen of these, fourteen per cent. of the stillbirths. The following table gives the causes which were ascertained:

Toxemia and eclampsia	13
Previous stillbirths	5
Diabetes	4
Tight cord	3
Fall or blow	2
Placenta previa	2
Hydrocephalic monster	2
Pyelitis	1
Premature separation placenta	1
Fibroid uterus	1
General peritonitis in mother	1
No ascertainable cause	44

In the figures quoted in these tables we have some indications for preventive measures. We have every reason to expect results, from specific treatment, started early and pushed assiduously in the luetic cases. Close observation from the earliest recognizable period of gestation with proper regulation of diet, hygiene, etc., can expect to reduce considerable the number of toxaemic and eclamptic cases. The diabetic, by proper dietary regulations and medical treatment may also be carried through a normal confinement. A few of the causes listed in the last table may, by appropriate treatment, be eliminated.

But the most disappointing feature at the present time is the number of cases in which the cause is unascertainable or unrecognizable. In forty-four cases or almost half our full term macerated fetuses, we could not discover any cause for the intrauterine death. How to attack this group is a most worthy problem. Its solution, it seems to me, depends on an intensive, cooperative effort between internist and obstetrician; a study, more thorough than ordinarily can be accomplished in the antepartum clinic, and should be undertaken by a skilled medical man to determine the existence of focal infection. The newer developments and tests for the determination of function of the various organs, including especially the internal glands, should be applied, the bacteriological study of the vaginal flora may reveal significant factors. It is only by such methods, that we can hope to prevent intrauterine deaths which occur in such a large portion of our stillbirths.

SUMMARY

1. The stillbirth rate at the New York Lying-In Hospital for 1924 was forty-one per one thousand.
2. The macerated fetus represented almost half of the stillbirths.
3. In the cases of macerated fetus, syphilis was present only in fifteen of the ninety-four cases.
4. Toxemia and eclampsia accounted for thirteen.
5. In forty-four no cause could be ascertained.
6. There should be a thorough examination made in every case of pregnancy by an internist, as well as by an obstetrician, and the mother closely watched throughout.

20 West Fiftieth Street.

An Approach to the Study of Pyorrhea Alveolaris*

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(*Concluded from page* 688)

In the United States only recently has emphasis been laid on the fact that it is not the brushing of the teeth that is aimed at which is to prevent pyorrhea, but that it is gum massage that must be stressed as a measure in increasing the local tone and resistance of the peridental tissues (38), (39).

Aside from the inadequacy of the value of the tooth brush, whether in the prevention of pyorrhea or decay, attention was called by Withhaus, of The Hague, that in his long experience he found that there must be some etiological relation between the brushing of the teeth and the breaking out of what he calls "the pernicious pyorrhea alveolaris" (45). Polet (46) of Brussels calls attention to the frequency of gum infection through the vigorous use of the tooth brush causing a chronic gingivitis, termed by him "chronic pseudo Vincent."

Attention (48, 49) was called to this inadequacy of mouth hygiene as practised today in an editorial in the New Haven Department of Health *Bulletin*. The advisability of the use of the tooth brush for purposes of gum massage, either for general mouth hygiene or for the prevention of pyorrhea, is questionable, although it is suggested that to derive the full benefit of the tooth brush in gum massage it should be used for fifteen minutes each time when used.

Considering the fact that many constitutional disturbances, such as chronic diabetes, nephritis, intestinal intoxication and an array of others are associated with pyorrhea in causal relationship and that focal infection, on the other hand, may be responsible for systemic disease as well as for metabolic disturbances, it is difficult to determine as to what extent infection, either of the focal or local type, is responsible in the inauguration of pyorrhea alveolaris. From the viewpoint of focal infection, the presence of the focus as a factor in inaugurating systemic disease is of primary importance, whether this focus be located in the jaw bone, the tonsils or in the intestinal tract.

We may, therefore, consider oral focal infection as a condition of disease in the jaw bone, contributory to alveolar atrophy. Much of the confusion in speaking of the different theories advanced by the localists has arisen from the fact that it was assumed that all localists considered the disease as from a local standpoint only, therefore local treatment was indicated. From the viewpoint of prevention, however, local treatments, such as are in vogue today, must be considered as to what extent these measures in themselves are contributory to the causation of pyorrhea alveolaris. When we take this attitude we find that the study of the etiology and treatment of this disease like that of any other disease that the human flesh is heir to lies in the domain of medicine and as such needs to be approached from a medical, biological point of view. This would imply the elimination of focal infection, the regulation of the proper dietary and the establishment and maintenance of mouth hygiene as a preliminary requirement in the study and treatment of pyorrhea alveolaris.

*Read before the Eastern Dental Society of Philadelphia, Pa., on December 3, 1925. Contribution to the Annual Symposium on Stomatology of the American Stomatological Association.

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Instruments, Apparatus, and Clinical Notes

High Enemata and Irrigations

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Chronic constipation is a progressive disease. It operates in a vicious circle. Constipation begets constipation. To break the vicious circle it is necessary to keep the bowels thoroughly evacuated for a time until the remedial measures that are contemplated have had a chance to accomplish their purpose. The evacuation of the bowels can be brought about either by the use of cathartics or by enemata and irrigations. The objections to the use of cathartics in chronic constipation are too well known to need enumeration and comment. It is with the details of the administration of enemata and irrigations that this paper is concerned.

Beside chronic constipation there are other conditions which are often treated by enemata and colonic irrigations, e. g., intestinal toxemia, or socalled auto-intoxication, colonic stasis, migraine, hypertension, arthritis, etc. Without committing myself as to the utility or futility of colonic irrigations in these affections, I merely want to describe a method of colonic irrigation which in certain types of cases I believe to be superior to the methods now in vogue.

Chronic constipation is now generally considered to be in the great majority of cases a spastic phenomenon. The spasm exists most often in the lower sigmoid; less often in the external or internal sphincters, and more rarely in the descending, the transverse colon or in the cecocolonic juncture. Mueller of Vienna believes that all constipation is spastic in origin and that there is no such thing as atonic constipation.

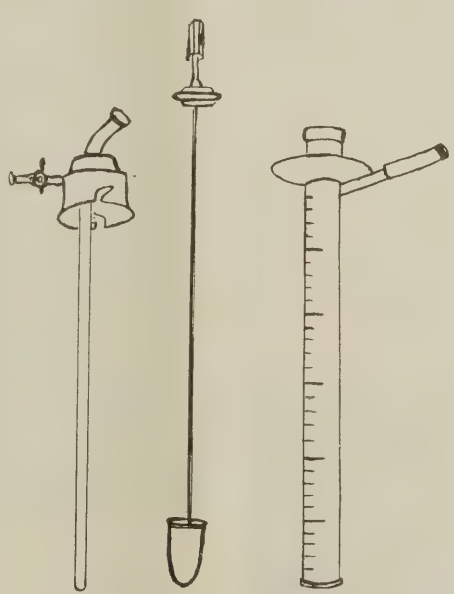

Fig. 1.—Instrument used for high colonic irrigations.

Spasm in the lower sigmoid is by far the most common condition and accounts for most cases of constipation. X ray examination of the patients in this group, forty-eight hours after a barium meal, shows most of the barium collected in the lower sigmoid. On sigmoidoscopic examination one finds the rectum empty of feces, but the further passage of the instrument becomes impossible on account of the solid mass of feces which it encounters.

In this type of constipation the patient's reaction to an ordinary enema is often quite characteristic. Either the water will not flow in at all or, if it does, will cause severe cramps because, being unable to pass into the sigmoid, it distends the rectum to the point of pain. If it does pass beyond the constricted point under the pressure of the water used for the enema, it remains in the higher colon, because there is not enough *vis a tergo* in the colon to expel it past the spastic portion of the sigmoid. This accounts for the patient's complaint that enemata are not only painful but useless, as the water injected either fails to return or else returns clear.

By fluoroscopic examination it can be demonstrated that in the majority of cases an opaque enema given with the ordinary fountain syringe will reach the cecum if a sufficient amount of fluid is injected. But in patients with spastic constipation, enough fluid cannot be injected to fill more than the rectum and a small part of the sigmoid, on account of the pain which the injection causes or the patient's inability to retain it. If a large part of the colon should be filled, and the patient then asked to evacuate his bowels, fluoroscopic examination will show most of the opaque mixture retained in the colon.

To overcome these shortcomings of the ordinary enema, high enemata and high irrigations are frequently employed. But by fluoroscopic examination it has been demonstrated that a rectal tube, even a rather stiff one, when inserted full length into the rectum curls up on itself and does not pass further than the ampulla of the rectum. Fig. 2 illustrates what occurs when the ordinary rectal tube is introduced full length into the rectum. Fig. 3 is a film taken when a rectal tube was inserted just beyond the internal sphincter and water allowed to run through the tube which was then inserted full length, with the expectation that as the water distended the bowel the tube would more readily pass high up without curling on itself. That this is not the fact is proved by this film.

A sigmoidoscope was introduced thirty c.m. then a long rectal tube was passed through it and the instrument withdrawn, while the tube was held firmly and prevented from coming out with the instrument. Fig. 4 shows the tube reaching high into the colon. If the tube be now connected with a fountain syringe a high enema can be given and allowed to return through the tube. A wide firm tube with an opening at the end is best for this purpose.

In administering an enema in this way, a larger amount of water can be injected without causing pain. The enema is allowed to return through the tube and the larger fecal masses, which would be detained at the narrow spastic portions of the sigmoid, readily pass out through the tube.

For high colonic irrigations I use the instrument shown in Fig. 1, which was made for me by Mr. R. Wappler, of the Wappler Electric Company. It is constructed to fit the Lynch sigmoidoscope. It is simply an application of the principle of the Kemp tube, or of any double flow irrigator, to the sigmoidoscope. The illustration needs little explanation. The afferent tube is connected with a two or three gallon irrigator by tubing, in the midst of which is interposed a bulb with a stopper so that if fecal matter clogs the tube it can readily be expelled. The efferent tube is connected with the drain pipe of a water basin, so that no fecal odor escapes into the room. This tubing, too, has interposed in it a larger bulb so that suction can be made if the tube be clogged with feces. A Lynch sigmoidoscope is inserted full length, the light carrier removed and the irrigator is attached and the fluid allowed to run. Two gallons can be used in fifteen minutes.

Fig. 2.—Showing what occurs when the ordinary rectal tube is introduced into the rectum.

Fig. 3.—Showing rectal tube inserted just beyond the internal sphincter.

In many cases, where the symptoms were pain, colic and constipation, which were not relieved by medication or by ordinary enemata, definite improvement followed treatment by high irrigations with the method described above. One typical case may be briefly cited.

Case.—A man, sixty years of age, had been suffering for a long time from a severe spastic constipation. Cathartics of any kind caused severe cramps. Milder laxatives and mineral oil were wholly ineffectual. An enema or two enemata in succession were not effectual; they produced very little stool, caused severe pain, and he had great difficulty in expelling the water. He had had frequent attacks of severe abdominal cramps which at first were diagnosed by two able physicians as acute appendicitis, but afterwards it was evident that they were nothing but severe spastic constipation. I stopped all cathartics and for three months gave him irrigations, as described above, at first twice weekly, later once a week. He was practically free from pain all that time.

Fig. 4.—Showing the tube reaching high into the colon.

I believe that the effectiveness of the Murphy drip would be much enhanced if it were given through a tube inserted high up into the descending colon instead of through a tube opening into the rectum. It would be well to introduce the tube in all laparotomy patients before operation and allow it to remain there for the first three or four days. It would aid in the expulsion of gas and be useful for the Murphy drip, for nutrient enemata, for medication, for high enemata, etc. While the rectum can absorb only water, glucose or peptones, it is possible that the higher colon can absorb other nutritive materials. There is no doubt that larger quantities of fluid can be more quickly absorbed from the higher colon than from the rectum.

The introduction of a tube high in the colon undoubtedly will diminish flatulence and abdominal distention which, in some cases at least, may be due to a spasm in the lower (sigmoid) colon. By keeping

this part of the colon continually open this most annoying complication may often be avoided.

CONCLUSIONS

1. The high enema as usually given is not a high enema, and is no more effectual, perhaps even less so, than the ordinary enema.

2. A method of giving enemata and high irrigations is described.

3. The introduction of a tube into the upper sigmoid or descending colon in patients before laparotomy is recommended.

210 West Seventieth Street.

The Cystoscope as an Aid to Diagnosis*

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To many cystoscopy seems a needless procedure, giving great discomfort to the patient and being unnecessary in the search for pathological lesions which our clinical sense may be able to discover without it. From the numerous instances where cystoscopy was indicated I was much impressed with its accuracy as a diagnostic measure and the absence of discomfort or serious aftereffects. The cystoscope has been heretofore regarded as an instrument of the genitourinary surgeon, but nevertheless the general surgeon and the gynecologist should become familiar with its use, as it deserves a thorough consideration in its broad field of utility.

In this paper I do not intend to make an exhaustive study of the cystoscope and its various applications, but only to mention some conditions as they occurred among our cases where the cystoscope and its associated procedures, such as ureteral catheterization and pyelography, were of greatest aid in determining pathological conditions of the urinary tract and where it aided us in excluding this tract as the source of this trouble.

In 1876 the invention of the electrically lighted cystoscope by Nitze and Leiter revolutionized the previously existing crude and painful methods of inspecting the bladder. One can imagine the progress and refinement along such lines of investigation, when one compares the procedure of a forcible dilatation of the female urethra for the insertion of a tube with our modern almost painless cystoscopy.

The cystoscope has its greatest application in the study of abnormalities in the urinary tract where it plays an indispensable rôle in establishing an accurate diagnosis. A failure to avail oneself of its use often leads to error. Given a patient with symptoms referable to the genitourinary tract it would be folly to attempt to determine the existing pathological lesion without the employment of the cystoscope, just as it would be to classify a comatose patient as of uremic or diabetic origin without confirmation by a blood chemistry.

I shall cite briefly a few cases illustrating various lesions of the urinary tract where a diagnosis without cystoscopic study was impossible.

Case I.—A. W., male, aged sixty-five, was admitted to the hospital with a painless hematuria of several weeks' duration. On physical examination no abnormality was found; a lesion of either the kidney or ureters or bladder might have accounted for the bleeding. Cystoscopy revealed a benign papilloma which was subsequently fulgurated.

Case II.—J. M., male, aged fifty-three, was admitted with hematuria and pain in the right lumbar region. On examination there was found right costovertebral tenderness. Here again several conditions might have been responsible for this patient's complaint. Cystoscopy disclosed a papillomatous growth in the bladder, very suspicious of a beginning malignancy.

Case III.—S. A., female, aged forty, was admitted with pyuria, hematuria and pain in the right lumbar region. About two years ago she had had her appendix removed for chronic pain in the right lower abdomen and back. On physical examination a large, slightly tender right kidney was palpable. A diagnosis of infected hydronephrosis or of kidney neoplasm was considered. After pyelographic study we favored a diagnosis of neoplasm which was confirmed by operation.

Case IV.—R. S., female, aged forty-six, complained of pain in the back and hematuria. On examination we found two large irregular masses corresponding to the kidneys. We suspected that the kidneys were polycystic. Pyelographic study of one of the kidneys showed a filling defect of its pelvis, thus favoring our diagnosis. Autopsy proved this to be correct.

Case V.—H. S., female, aged thirty, complained of a mass in the abdomen. This mass was smooth and regular, about the size of a grapefruit at the level of the umbilicus, reaching several fingers' breadth below it in the median line. Several conditions were considered, including a fused kidney. A ureteral catheter was passed along the left ureter and on x ray found it entering the mass. The right ureter could not be catheterized. This was undoubtedly a case of a fused kidney.

The cases cited above are representative of some of the urological conditions where without cystoscopic study an attempt at diagnosis is merely a conjecture. A failure to avail oneself of complete cystoscopic investigation in suspected lesions of the urinary tract often leads to erroneous diagnosis. Even in the face of an apparent lesion of the genitourinary tract we should not miss the advantage of a means of study which will enhance the correctness and thoroughness of the study of pathological conditions and at the same time disclose anatomical defects.

*From the services of Dr. Henry Roth and Dr. L. Miller Kahn, Lebanon Hospital, New York.

The following cases were incorrectly diagnosticated owing to lack of complete cystoscopic examination.

Case VI.—L. C., female, aged forty, complained of pain in the back with hematuria. Eight months before, cystoscopy without a pyelogram revealed nothing. On physical examination there was right costovertebral tenderness. Admission diagnosis was renal stone and pyonephrosis. Operation disclosed a growth in the pelvis which proved to be a papillary carcinoma. A pyelogram would have been of considerable value and perhaps might have established a diagnosis. Such cases are seldom correctly diagnosed without a pyelogram.

Case VII.—H. M., male, aged fifty, was admitted with a history of retention of urine. The urine passed prior to admission was bloody. On examination there was found a large, regular prostate seemingly responsible for the retention of urine. Owing to the presence of a large quantity of blood and blood clots in his bladder, an attempted cystoscopy proved unsatisfactory. A suprapubic cystotomy revealed the presence of a carcinoma of the bladder.

Case VIII.—S. G., aged sixty-five, male, complained of retention of urine. On examination we found a large regular boggy prostate. The bladder was moderately distended. No cystoscopy was done. During the first stage suprapubic prostatectomy five large vesicle stones were discovered.

The last two cases emphasize the importance of cystoscopy in cases where diagnosis seems obvious and the possibility of the presence of multiple lesions in the genitourinary tract.

One or several attacks of renal colic was the chief indication in many of our cases where cystoscopy was necessary. In studying these cases we were disappointed by the lack of röntgenological evidence of stone in many cases where the symptoms and cystoscopic study warranted the diagnosis of ureteral calculus. Bearing in mind that approximately ninety per cent. of ureteral calculi are detected by means of our present day methods in x ray technic we were often inclined upon failure of the x ray to believe we were dealing with some other lesion of the urinary tract which simulated a calculus.

Ureteral stricture is a common lesion and is being recognized as responsible for many unaccountable and obscure abdominal pains. Hunner has found this condition in two thousand patients in the past several years. Its symptomatology may be so diverse as to mimic other abdominal lesions. Pain is the chief symptom, more often local over the ureter near the pelvic brim or over the kidney. If the stricture is marked there is often stasis of urine, hydronephrosis and infection. Dietl's crisis may also occur. Many cases of prolonged infection of the pelvis of the kidney have been shown to be caused by stricture of the ureter, as evidenced by the fact that a cure resulted after gradual dilatation of the strictured area. This lesion should always be suspected in cases of pyelitis which do not respond to ordinary treatment provided no calculus is present. Strictures can only be diagnosticated by ureterogram or bulb test.

The cystoscope should be more generally used by the general surgeon as a means of making certain that the urinary tract is not the offender. More accurate diagnoses would result and unnecessary surgical explorations of the abdomen would be less often resorted to if such diagnostic accessories were more commonly used.

The relationship of the appendix to the right kidney in pathological states has often been the subject of discussion. It is well known that lesions of the right kidney and ureter may simulate a lesion of the appendix and vice versa. Some of the patients sent to our hospital to be operated upon for appendicitis were found only after cystoscopic study to have lesions of the urinary tract. Occasionally we see a patient with ureteral colic who has already been operated upon for chronic appendicitis when a thorough investigation might have disclosed the true nature of the condition and an unnecessary operation would have been avoided. Renal or ureteral stones on the right side cause referred pain to the gallbladder and appendicular regions. On the left side the pain may simulate anginal attacks. In 294 cases of renal and ureteral stones Braasch found the pain referred to the right upper quadrant in fifteen per cent. and to the right lower quadrant of the abdomen in nine per cent of the cases. This emphasizes the need of more accurate study and differentiation to determine the source of the trouble. X ray shadows in the right upper quadrant of the abdomen may be caused either by stones in the gallbladder or kidney and the only means of differentiating their location is by pyelographic study.

Renal colic is known to simulate other abdominal lesions, such as intestinal obstruction, perforation of a gastric or duodenal ulcer, etc. It would undoubtedly be to the advantage of the patient if the physician approached an obscure case of cholelithiasis or chronic appendicitis with a more conservative viewpoint giving full value to the advantages to be gained by a careful investigation of the urinary apparatus before operation. The following cases illustrate with what difficulties one may be confronted:

Case IX.—M. S., male, aged thirty-eight, was taken ill suddenly with abdominal cramps and pain in the right lumbar region. The following day he vomited and had diarrhea. The pain was more severe now in the right lumbar region radiating to the penis; bloody urine was passed. On examination there was tenderness in the right lower abdomen and right lumbar region. When the patient entered the hospital one week later he presented a very large tender mass beginning in the right lumbar region palpable anteriorly and reaching down to the iliac fossa. Even now the diagnosis still rested between a pyonephrosis and an appendicular abscess, the latter diagnosis being favored. Such an opinion was strengthened by cystoscopy with x ray which revealed normal sized kidneys with normal urine from both. Operation confirmed diagnosis of appendicular abscess.

Case X.—B. G., female, aged forty, complained of vague and indefinite pain in the right upper quadrant with no radiation and no relation to meals. She was thought by the family physician to have chronic cholecystitis. No cystoscopy was done. At operation a normal gallbladder was found and in search for other lesions to account for the pain a prolapsed freely movable light kidney was discovered which was undoubtedly responsible for her complaint.

(*To be concluded*)

Symposium on Endocrinology

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Psychoendocrine States

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"This is the age incontrovertibly of fads," says Dercum. But endocrinology is not included in this term. Indeed, so far afield from faddishness does the subject of ductless glands seem to this same authoritative writer, that he includes even such vaguely pathological functional conditions as the psychoneuroses in the psychoendrocrine[1] category. Which shows courage as well as wisdom.

It has been pointed out by Biedl that, whereas formerly all organic correlation was assumed to be nervous, the modern conception is that the nervous relation is induced by chemical action—that chemical action precedes impulse. And this, if true, applies to the nervous mechanism concerned in abnormal as well as in normal cerebration.

In the process of evolutionary development, the endocrine system preceded the nervous; and impulses were sent by the comparatively slow chemical messengers long before the nerve telegraph system was established. The two systems now work together, the nervous mechanism for the purpose of getting quick action apparently as in cases of emergencies, and the chemical response requisitioned for sustained effort. This is suggested by the close anatomical affiliation between such glands as the adrenals and the sympathetic system, the adrenal medulla being part of the chromaffin system embryologically. And this anatomical and clinical suggestion seems to be verified in certain abnormal mental states in which there is involvement of the adrenals, either as primary or as secondary factors.

In many acute infections, for example, there is an increase in the amount of adrenalin in the circulation; and certain manic syndromes, both acute and chronic, give a picture of infectious states, with increased adrenal action. Neurasthenia and hypochondriacal states, on the other hand, seem hypoadrenal in character, possibly following hyperstimulation of the adrenals by some infectious process.

Of course, demonstrable endocrine disturbances, in some degree and at some stage of the syndrome, are present in many of the psychoses. But in what relationship?—cause, effect, or merely coincidental?

The correct answer to this question involves one of the most important problems in psychiatry—suggests the possibility of raising this somewhat inchoate department of medicine to the scientific level of the other fields of diagnosis and therapeutics. And the fact that endocrine misfunction is an etiological factor, in one or more of the psychoses, is a most gratifying beam of light in a somewhat hazy field. It is an excellent weapon against charlatanism.

Fortunately, the weight of clinical evidence seems to indicate that endocrine action is etiological. Physical and metabolic abnormalities are usually present in psychopathic patients before the mental symptoms appear; and such patients present anatomical stigma to the extent of seventy-five per cent., according to Saiz. These, and such patent physical abnormalities and the toxic conditions that accompany certain psychoses, are much more suggestive of cause than of effect. And such endocrinologists as Dercum, Lisser, Bandler, Timme and others are very definite in the statement that endocrine imbalance is responsible for some of the psychoses. Surely no one today doubts that the mental state seen in myxedema cases is caused directly by an underacting ductless gland. And if this is true in this exaggerated form of hypothyroidism, surely it is a reasonable deduction that less degrees of thyroid abnormality, or other forms of it, may be responsible for other types of mental aberrations.

Yet there is no more reason to associate psychoendocrine conditions with the thyroid ductless gland, than with several other of the group of endocrine organs. Indeed, there is some good clinical evidence to the contrary. For example, the observations of Foss and Jackson as to the incidence of mental disease to goitre in the Pennsylvania goitre belt near Danville, lead to the conclusion that, "insanity is extremely rare among the large number of goitre patients applying for treatment in this locality, there being no true insanity among the eight hundred patients studied." But the experience of these ob-

[1]Psychoendocrine is used as a term to express conditions for which there seems to be no other available single word or term. The word has been censored by no less an authority than Dr. Frank H. Vizetelly, editor of the New Standard Dictionary, at least to this extent that he writes: "If it is a term that satisfies you, meets your needs, you are within your rights to use it."

servers in this respect seems rather unusual, and is not in accord with our own observations and those of our associates in this, and the staff of the adjoining psychopathic hospital, where the percentage of goitrous insane patients is very much greater. And, in any event, even though it could be shown that an overactive thyroid does not often cause psychoses, this does not in any way affect the positive evidence that an underactive thyroid often does, as seen in myxedema cases.

However, the item of greatest interest and importance to us as clinicians is the determination as to whether certain kinds of endocrine misfunction is directly responsible for some kinds of mental distortions, psychopathic or psychoneurotic; and if treatment aimed to correct the endocrine abnormality will clear up the mental condition.

It is our belief, based upon personal experience and the experiences of our associates here and those reported by our confrères in other places, that one may reasonably expect to get better results by vigorous opotherapy in properly selected mental cases with manifest endocrine disturbances, than by any of the older methods of treatment alone, which did not consider endocrine imbalance as an etiological factor.

To be sure, we do not as yet cure most cases of dementia precox by organotherapy. Neither do we cure most cases of general paresis by vigorous antiluetic treatment. Despite which, no one these days, I suppose, doubts the luetic cause of paresis. On the other hand, there are many patients with paresis that are greatly benefited, even though not cured, by antisyphilitic treatment. And, similarly, many cases of dementia precox, and other psychoendocrine cases, are markedly improved—some of them seemingly cured— by glandular treatment. And, since the older conceptions of the causes of mental disorders and the older forms of treatment based on these conceptions were so unsatisfactory in the all important matter of results, it seems to me that this newer field is entitled to an exhaustive, intelligent trial. Particularly so, since the older one has so very little to offer.

The following are some cases that fall in the category under consideration, some of which, we venture to believe, fared better under the newer treatment given them than they would have done under the methods of treatment in vogue everywhere prior to the advent of opotherapy:

Case I.—A woman of thirty-nine was in a borderline state, with a history that indicated a gradually increasing mental instability that eventually would become a true psychosis in all probability, and a physical condition that was endocrine beyond question. Her complaint was essentially one of fear—she said she did not know what she was afraid of, or why. Her family history was negative. She menstruated first at eleven or twelve, periods regular and painless at first, later delayed about two weeks, profuse, and lasting about ten days. Married when fifteen, but had never been pregnant. For the last ten years she had been having nervous chills and gradually becoming more nervous and emotional (apprehensive). She said the chills "began in her stomach and went to her heart and then all over her," and she sometimes "lost herself." Had pain in the back of head, lips felt numb, and also a numbness or lack of feeling at the end of the spine when she sat. For the last four years had had frequent dull headaches. She had cold spells at night. These symptoms were not all constant, but were becoming more frequent.

Examination showed a woman much overnourished —girdle type of obesity. Skin was dry and smooth, nails brittle, hand of the pituitary type. Full across the back of the neck, hair turning gray, large round head and face. Teeth were small, about the size expected in a person of fifteen. Tonsils slightly enlarged, appeared to be infected. Thyroid palpable, possibly slightly enlarged. No tremors of extended fingers. Skin of extremities was cold. Heart and lungs negative. Blood pressure 150-90, pulse 86.

Her mental state was one of mild, but increasing, apprehension—of worry about herself, without great depression. During the last four years she had gradually developed ideas of a paranoid type without foundation, which she recognized as delusions, but which were gradually increasing in intensity, and had now reached a state where her insight was not quite clear—she did not always recognize them as delusions. Meanwhile her physical symptoms were gradually increasing, presenting a syndrome that an endocrine type as generally considered at present.

Pituitary products with calcium phosphate were prescribed, and diet regulated somewhat. After thirty days the symptoms showed improvement, she was less fearful and was losing weight. Three months later she was almost entirely free from her mental symptoms, had good insight, and was cheerful and hopeful. She had lost twenty pounds. She has kept up the treatment faithfully. She declared she felt well.

Case II.—That of a woman of forty, who became greatly depressed to a degree in which she attempted suicide, and whose feeling of dissociation became actually psychopathic, requiring hospital care. Family history negative. Married at eighteen, three children, no miscarriages. The beginning of her mental state dated several years back, and was very gradual in its approach. Examination showed a woman very much overweight (two hundred pounds, five feet four inches) the distribution of her fat suggesting the pituitary obesity of Timme. Thyroid slightly enlarged. History of goitre in childhood. Nails brittle, ridged. Heart and lungs negative. Nothing of special note, except a striking condition of hypotonia and muscle flabbiness—the muscles had what might be called a mushy feeling—and a sluggishness in her mental and physical reactions. She was given adrenal and pituitary products with thyroid. At the end of a month her blood pressure had gained thirty points systolic (from 110 to 140) and, although she had lost thirty pounds in weight, her muscle tone was noticeably improved.

Her mental condition was much better—mind more active, clearer, and with less dissociation, and good insight into the nature of this condition. After four months she became perfectly clear mentally, with only an occasional hint of the old dissociation. And meanwhile she had lost a total of sixty pounds in weight, with a decided improvement in muscle tone, actual strength, and endurance. She was originally troubled with insomnia, but this cleared up in six weeks, with only an occasional restless night. She is still under observation, but not treatment.

The suggestive points in this case are the type of

psychosis, which did not seem to fit exactly into any of our present accepted classifications, and the seemingly close association of this condition and the metabolic disturbance.

CASE III.—Mrs. W., a woman of twenty-four, married three years, no children, no pregnancies. Family history good; personal history—usual children's diseases, no severe illnesses. Menstruation began at fourteen, irregular, scant, at times painful. A fine looking young woman, intelligent and of the cultured type.

Three years ago, shortly after marriage in which her sexual life seems to have been normal, she began having periods of insomnia, a feeling of nervous apprehension, and gastrointestinal disturbances. Menstruation was scant and irregular. Began gradually to have difficulty in controlling the action of her legs and arms—the limbs would draw and assume grotesque attitudes so that at times she could not walk or direct them—a catatonic condition. She became hypochondriacal, thought that her gastrointestinal organs were distorted, and would not eat anything but liquid foods of certain kinds. Lost twenty-six pounds in weight. Mentally, seemed to have definite delusions, was introspective to the exclusion of almost everything else, imagined that she did not sleep at all—had not slept for five months, she declared.

The patient's feet and hands were cold; blood pressure was 103-80; skin was cool and clammy; arms and legs were resistive on attempts by examiner to move them; reflexes were normal. Uterus was small, almost infantile in type, but in normal position. She was tall, well formed, and of pleasing appearance.

The picture presented by this young woman was that of beginning dementia precox. She was given ovarian substance, whole pituitary, and thyroid by mouth, and ovarian extract twice weekly hypodermically. Circumstances were such that her home surroundings could not be changed, but the treatment was carried out precisely. She began to improve within three weeks.

In five months' time the patient's delusions had disappeared and were recognized by her as delusions. She was eating well, was no longer hypochondriacal, had gained twenty pounds, was hopeful and cheerful, doing most of her own housework. Slept six or seven hours at night and one or two hours in the afternoon. Menstruation less irregular, more profuse, not painful. She was cheerful and hopeful. The spasticity of her legs was still present, but much less than when first observed, and she had much better muscular control—could walk readily and did so several miles each day. She acted and appeared normal, a striking contrast to her first appearance the coldness and clammy feeling of the extremities has almost disappeared, although the left foot still bothered at times. Her blood pressure was 120-85. She was keeping up the treatment very conscientiously.

There is no doubt in our minds that this patient was positively and definitely benefited by the treatment. When first examined she presented a picture of a person, the type seen hundreds of times by all clinicians, that heretofore almost invariably defied treatment, and developed permanent and characteristic mannerisms, negations, and delusions, with final mental deterioration.

Desiccated Gonadal Substances*

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It is the aim in the drying of endocrine glands for therapy to preserve unchanged as far as possible all their chemical elements. Especially so with the preparation of such materials as have as yet debatable therapeutic properties and from which no characteristic chemical substance has been isolated. In order to estimate the residuum of "freshness" in tissues after desiccation, it is the practice to determine both quantitatively and qualitatively the changes in the labile properties of these tissues. To the extent to which these are preserved may we consider the tissues "fresh."

There was presented elsewhere (1) a theoretical consideration of the problem of dehydrating endocrine glands, and some simple chemical estimations (2) calculated to throw light upon the effect of dehydration of tissue by different methods. The effect of dehydration upon a very labile property of tissue, namely, the enzyme action, is presented here.

Enzymes are found in living matter. They have not as yet been isolated in pure form, and are known only by the effects they produce. Their behavior and the conditions able to inactivate or destroy them, stamp enzymes as possessed of very sensitive constitutions. They are similar to living organisms with respect to the ease with which they may be inactivated. In a broad sense, enzyme action as studied *in vitro* may be regarded as a close approximation to the chemical study of living processes in the laboratory. We can readily appreciate from this that the enzyme action of tissues after treatment for preservation forms an exacting test for "freshness."

Falk, Noyes and Sugiura (3) (4) (5) by a method of collecting data on the esterase (lapase) action of fresh tissues developed a method which may be used in the study of desiccated endocrine products. They determined the hydrolyzing value of different organs and tissues in several species of animal on ten esters under controlled conditions. An esterase

*From the Plaut Fund for Research in Internal Medicine, Harriman Research Laboratory, The Roosevelt Hospital, New York. Read before The American Society of Clinical Pathologists at Philadelphia, Pa., May, 1925.

enzyme hydrolyzes an ester with the production of free acid. By titration of the free acid formed with standard alkali, quantitative values for the esterase actions are obtained for the given experimental conditions.

The endocrine products of three manufacturers were used. Each of these products was stated to be desiccated *in vacuo* at a temperature not over body heat. The several sets of products from each of these manufacturers purchased about a year apart were studied. A paper (2) in which the ether soluble portion and several nitrogen fractions of the earlier tested. The values in the table indicate that products A have greatest esterase action. The absolute measure of this appears to parallel the amount of soluble nitrogen. This parallelism is strikingly brought out by the decreased order of magnitude of esterase action of the two samples of orchitic substances of products B and C, which order is accompanied by similar changes in the values of the soluble nitrogen.

It is not the purpose of this report to adduce evidence as to the relative therapeutic value of these three products. Such properties must still be determined in the clinic (1A). An earlier report on

TABLE 1.*

Product	Ether Soluble (I)	Ether Soluble (II)	Total Nitrogen (I)	Total Nitrogen (II)	Soluble Nitrogen in water (alkaline) (I)	Soluble Nitrogen in water (alkaline) (II)	Nonprotein Nitrogen water (alkaline) (I)	Nonprotein Nitrogen water (alkaline) (II)	Percent Total N soluble in water (alkaline) (I)	Percent Total N soluble in water (alkaline) (II)	Tissue
A	16.0	11.2	11.1	11.7	6.1	5.7	1.2	1.2	55.2	49.	Whole ovary
B	14.7	15.5	11.4	11.0	3.8	3.6	1.4	1.6	32.8	32.5	
C. (stock)	4.4	4.6	11.8	12.6	5.5	4.5	1.7	1.6	46.7	35.6	
C. (sow)	4.5	....	12.8	....	5.4	...	1.9	...	41.8	....	
A	20.2	13.7	10.4	10.2	5.82	5.9	1.3	1.42	55.8	58.	
B	18.1	16.0	10.2	9.9	...	3.7	...	...	....	37.3	Corpus lutem
C. (stock)	2.8	3.9	12.9	12.8	3.5	3.9	1.4	2.0	27.4	....	
C. (sow)	3.6	....	13.5	....	4.3	...	1.3	1.9	31.7	30.2	
A	11.8	9.8	11.7	11.7	5.4	5.8	1.3	1.1	47.0	49.5	Ovarian residue
B	7.6	7.2	12.9	12.6	3.0	4.1	1.3	1.3	22.5	31.9	
A	23.3	18.2	9.7	10.5	7.0	7.3	1.6	2.0	72.0	69.	Orchitic substances
B	12.1	12.7	11.8	11.9	4.2	2.6	2.4	1.7	35.6	21.7	
C	9.7	7.3	11.9	12.3	2.8	5.5	2.0	2.5	23.2	44.6	

*The value for each fraction is expressed as parts per 100 by weight in original sample.
(I) Analysis of first lot of material. (II) Analysis of second lot of material.

TABLE II.

Organs	Products A. *Enzyme action (I)	Products A. *Enzyme action (II)	Products A. **Soluble N. (water alkaline) (I)	Products A. **Soluble N. (water alkaline) (II)	Products B. Enzyme action (I)	Products B. Enzyme action (II)	Products B. Soluble N. (water alkaline) (I)	Products B. Soluble N. (water alkaline) (II)	Products C. Enzyme action (I)	Products C. Enzyme action (II)	Products C. Soluble N. (water alkaline) (I)	Products C. Soluble N. (water alkaline) (II)
Whole ovary	73.2	106.6	6.1	5.7	56.7	48.5	3.8	3.6	69.0	94.1	5.4	4.5
Ovarian residue	83.0	81.8	5.4	5.8	24.7	38.6	3.0	4.1	Not made by this manufacturer.			
Corpus luteum	53.7	45.6	5.8	5.9	5.8	21.2	...	3.7	11.2	17.7	3.5	3.9
Orchitic substances	70.2	97.5	7.0	7.3	49.0	21.4	4.2	2.6	22.5	53.11	2.8	5.5

*Measure of sum of esterase actions on all ten esters.
**These nitrogen values expressed as parts per 100 by weight, in original sample.
(I) Results on first lot of material. (II) Results on second lot of material.

batch of materials were reported led to the opinion that products A probably were prepared after a better technic than B and C because a higher percentage of the total nitrogen soluble in water remained in them. Table I shows that in a similar analysis of the second lot of gland substances from these same manufacturer's products A still possessed the highest water soluble nitrogen fraction. It may here be pointed out that products A were not defatted, products C were all defatted and only the orchitic substance of products B was defatted.

It was expected that such influences, in the process of dehydrating glands, destructive of the tissue enzymes, might reduce quantitatively the esterase action on each of the ten esters used. And, since equivalent amounts of each of the esters were employed in this experiment it was deemed permissible to combine the absolute actions upon the separate esters in a single measure—this measure being the sum of the absolute actions upon the separate esters in each series for each endocrine substance. Table II gives these absolute values for the three ovarian substances —whole ovary, ovarian residue and corpus luteum, and for the orchitic substance for products A, B and C. This table also shows the percentage of water (alkaline) soluble nitrogen for each of the samples products A, B and C indicated, because of the greater value to the soluble nitrogen, that A was prepared by a technic safer in the sense that it caused less change in the fresh material. This enzyme study on the same products leads to the same conclusion. Those interested in endocrine therapy, especially with materials whose clinical value is in question, must realize that differences in the method of manufacture of these materials result in their being supplied with different chemical mixtures but labeled with identical names.

The authors wish to thank Mr. Isaac Lorberblatt for determining the nitrogen and fat values.

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Some Clinical Aspects of Human Sex Gland Maldevelopment and Its Possible Relief

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A case which I had the opportunity of examining about a year ago brings up the interesting question of that type of sex gland maldevelopment known as pseudohermaphroditism. In this case the examination of a boy revealed the fact that I was dealing with a pseudohermaphrodite. The general clinical characteristics are well illustrated in the accompanying photographs. (Figs. 1, 2 and 3.)

On looking into the history of this patient I found that originally the sex was considered female. The school records indicated that the socalled girl was seven years and three months of age, but that she had the physical development normal to a twelve year old child. Mentally, however, she was rated at seven years. She could read very little and her mathematical accomplishments consisted only of an ability to count a row of objects. The child had a sluggish temperament, was always slow and brief in response, volunteered nothing and spoke in a hoarse, harsh voice. Generally she showed the shutin type of personality, unemotional but with a dazed expression in the eyes reminiscent of the epileptic. She was classed with subnormal children.

FIG. 1.—Feminine characteristics of patient.

The development of the penis had apparently caused the child's sex to be doubted and "she" was changed to a boy and given a boy's name. Some time after this the case came under my observation.

The interesting point in connection with hermaphroditism is that both female and male gonads may coexist in the same individual, and that sex manifestations are matters of the functional secretions of certain cellular tissues rather than the anatomical or morphological distribution or arrangement of organs. Some assert that man is bisexual and that every normal human male and female retains cells of undifferentiated accessory sex organs of the opposite sex; i. e., that there is no such thing as a pure male or female, but that each contains the elements of the other sex. The secondary genital organs have a bisexual origin and each adult shows some degree of hermaphroditism.

The matter of development of secondary sex characters in a masculine or feminine direction is one that depends upon the predominance of masculine or feminine internal secretory glandular tissue. The occurrence of heterologous sexual organs, or other characteristics usually associated with a particular sex, is explained on the supposition that the suppressed or dormant secretory portions of the sexual glands belonging to the opposite sex have attained some activity or ascendancy.

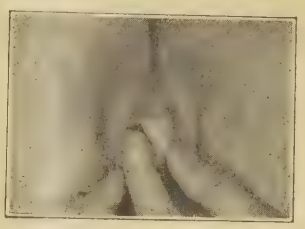

FIG. 2.—Pseudohermaphroditic genitalia disclosing labia, penis, urethra, vaginal cloaca, and pudendal aspect of external genitalia when in the lithotomy position with labia spread.

Hermaphroditism is to be distinguished from eunuchoidism in which, in the male, for some congenital or constitutional reason, the sex glands fail to develop normally, but in which there is no direct manifestation of duality of sex characters. I have seen several cases of this type in which the external genitalia were of infantile type, as may be seen in the accompanying illustrations. (Figs. 4 and 5.) The eunuchoid lacks the sexual vigor and potency of the normal individual but otherwise passes for a male.

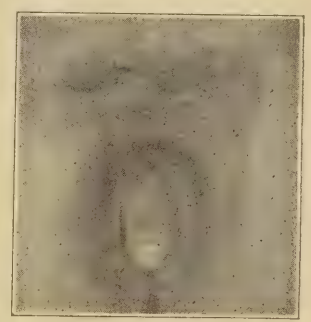

FIG. 3.—Size of penis and its position covering the vaginal cloaca.

The hermaphrodite, on the other hand, is a sexless being, a condition which entails peculiar physical, mental, moral and legal consequences. The constant brooding and introspection to which these unfortunates are subject frequently make their existence miserable and they often are driven to suicide. Because of this it is a matter of the gravest importance that just as soon as any doubt arises regarding the true sex of a child, parents and guardians should take immediate steps to have one definite sex established. In this regard I consider that, after taking

FIG. 4.—Eunuchoidism. Observe development of breast, and contour of body and genitalia.

every factor entering into a given case into consideration, a testicular or ovarian transplantation is of particular value, depending upon which sex elements predominate. In well selected cases and with proper technic not only does the transplanted tissue function and have its proper effect in developing and establishing the dominance of the proper characteristics, but there is good reason to believe that the transplanted tissue enables homologous tissue to develop. Thus Morris (1), in 1916, reported a case in which a scrotal testicular graft was apparently absorbed but at the same time the vestiges of the man's own testicles regenerated and began to grow, as well as the vestiges of the epididymis and cord.

I have fully demonstrated elsewhere (2) that testicular grafts are capable of becoming vascularized and functioning tissue, and that the secretions from such transplants produce the same biological effects as the secretions from normal testicular tissue, apart from spermatogenesis. Knud Sands's (3) experimental transplantation work proved that the implantation of one type of sex gland in the opposite sex caused development of both types of glandular tissue.

I believe that in pseudohermaphroditism an early sex gland implantation will not only develop the secondary sex characters, physical and psychical, appropriate to the gland implanted, but will help to develop the nondominant similar glandular element existing in the subject.

The same applies to eunuchoids with defective testicular development, a fact which has been clinically demonstrated. To neglect these classes of sex gland anomaly and not subject them to thorough study and every possible assistance is wrong both from humanitarian and scientific points of view.

FIG. 5.—Penis and scrotum of eunuchoid.

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Endocrines in Blood Pressure*

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In a disease like hypertension, whose ravages are responsible, directly or indirectly, for as many deaths as cancer and tuberculosis combined, if something new is brought forward towards lessening this frightful mortality, it certainly needs no introduction.

The use of antipituitary serum in hypertension, prepared by injecting the pituitary gland in a horse, precludes a direct or indirect endocrine causal relationship to blood pressure. Such a view has been shared by many medical authorities throughout the world. Everyone is acquainted with a very frequent form of hypertension due to hyperthyroidism.

In diabetes, where the islands of Langerhans are diseased, hypertension is not an infrequent occurrence. Insulin lowers blood pressure in these cases.

The hypertension which originates at the time of the male and female menopause is known to everybody. Fifty per cent. of the hypertension that I see in women can be traced to the menopause. I know of no better way of foretelling the approach of the female menopause than by the steadily rising blood pressure, providing there is no other palpable explanation; and this irrespective of the menstrual character at that time. The very best remedy that I know of for these women with hypertension of climacteric origin is the administration, by mouth, of five grains of corpus luteum three to four times daily.

Bruno Bellucio exposed the testicles to x rays, in men past sixty years of age, having a blood pressure of 180 and over; this destroys the seminiferous tubercles but leaves the interstitial cells of Leydig intact. In every one of his cases he obtained a marked reduction in blood pressure, both systolic and diastolic, sometimes as much as one hundred millimetres, which reaches its maximum at the end of ten days after exposure, and the blood pressure did not begin to rise until the end of twenty-five days. This is similar and harmonizes with the results of the Steinach operation in old people, where, as you know one of the effects is the decided lowering of blood pressure.

I wonder if the favorable results obtained by some clinicians in hypertensive cases, after exposing the tonsils to the x ray, may not have been due in reality to the fact that the pituitary shared in this treatment. I have tried this method of treament but obtained

*Delivered by invitation at a meeting held on April 19th, 1926, at the New York Academy of Medicine, before the Medical Association of Greater New York.

nothing but negative results. The pituitary was carefully excluded from receiving the x rays.

HYPERTENSION A COMPLEX PROBLEM

But unfortunately the problem is more complex. The endocrine glands are not the only factors in blood pressure. While it is true that a persistence of hypertension leads to arteriosclerosis, cardiac hypertrophy, myocarditis and chronic nephritis, it is equally true that some cases start from the onset as nephritis and hypertension develops subsequently. We must admit, however, that we may have both nephritis and arteriosclerosis without hypertension. There is a close relationship between hypertension, chronic nephritis and cardiac sclerosis, most probably because of a common, but as yet unknown, etiology and must be treated accordingly.

FOCAL INFECTION AND ALLERGY IN HYPERTENSION

In another group of hypertensions general focal infections play a vital rôle. I have observed another form of hypertension which is associated with allergy. Do not hesitate to give a hypodermic of adrenalin to an asthmatic with hypertension. You will find that not only will you relieve him of his asthma but also of his hypertension. I have frequently seen a drop in blood pressure of twenty to sixty mm. in such cases after the administration of adrenalin. I have seen patients who have been permanently relieved from their asthma, also permanently relieved at the same time from their hypertension. The blood pressure coming down from 200 to 160 systolic with a corresponding diminution in the diastolic pressure. In hay fever cases whose blood pressure ranged around 180-120 after three injections of pollens allergens the blood pressure came down to 145-80.

OXYGENATION IN HYPERTENSION

From these few remarks it is evident that hypertension has a manifold etiology and therefore cannot have a uniform therapy. Whatever its etiology I believe that when the last chapter on blood pressure will be written it will be found closely related to the process of oxygenation in the body. That is why when the insufficiency of the circulation improves there is a lowering of blood pressure, and only exceptionally is there an increase. For the same reason digitalis is not contraindicated in hypertension, but will frequently lower blood pressure considerably. I believe that the anemia of nephritis and infection, which plays such an important rôle in oxygenation, also is an important factor in hypertension. The vital capacity is very markedly diminished in hypertension.

It is interesting to note that the guanidin injections of Major not only raise blood pressure but markedly decrease the respiratory rate. Daily injection of ten c. c. of a twenty per cent. glucose lowers the blood pressure but also changes the colloidal condition of the serum, the viscosity of the blood and widens the capillaries. All these factors influence markedly oxygenation. Numerous other factors could be cited to support this theory. This for the present will be sufficient.

DIMINISHED LUNG SPACE IN HYPERTENSION

This does not explain the familiar hereditary nature of hypertension. I therefore had Dr. Siegfried Weinstein examine the respiratory apparatus of these patients, both fluoroscopically and radiographically and I was surprised to discover that the hypertension cases had small lungs, in proportion to their body weight when compared with other nonhypertension cases. Whereas hypertension cases had as low as one quarter square inch of lung space for every pound of body weight, the nonhypertension cases had frequently twice the lung space and even more for every pound of body weight.

The marked influence of small lungs upon oxygenation can be readily understood if we bear in mind that out of the four and a half litres of blood in our bodies, forty per cent. by volume is red blood cells, with a surface area of three thousand square metres, or a little less than a block; that every second the blood pumped into the lung, for the purpose of liberating the carbon dioxide and saturating itself with oxygen, has a surface area of eighty square metres. Oxygenation would certainly be very markedly influenced by such a diminution of aeration area as is evidenced in our cases of small lungs in hypertension.

The compensatory mechanism of our body plays an important rôle in all these conditions enumerated.

ANTIPITUITARY SERUM IN HYPERTENSION

My experience with the antipituitary serum comprises its use in about thirty cases. These patients were both ambulatory office cases and hospital cases. Some cases in this series must be discarded because for one reason or another they received but one or two injections or were not long enough under observation. About one half of the patients seemed to show a lowering of their blood pressure and consequent benefit.

According to the method of Dr. Laura, one and a half c. c. of antipituitary serum, prepared by injecting the pituitary gland in a horse and the serum obtained was injected into these patients every other day for about seven or eight doses. Great care was taken to obviate the usual allergic reaction when horse serum was applied. Serum reactions were rather infrequent both local and general. It is exceedingly difficult to judge therapeutic effects from any measure in essential hypertension, the only cases employed in our series, on account of the marked variability in blood pressure under normal conditions. Less than half the patients seemed to have been benefited somewhat by this treatment. I believe the results are encouraging and the serum should receive further trial.

CONCLUSIONS

1. Hypertension, directly or indirectly, is responsible for more deaths than carcinoma or tuberculosis combined.
2. There is a relationship between the endocrine glands and hypertension.
3. There is a relationship between nephritis and myocarditis and hypertension.
4. Infection, allergy and oxygenation play a vital rôle in hypertension.
5. Hypertension cases have a marked diminution in lung space as compared to their body weight.
6. The antipituitary serum is worthy of further trial in hypertension.

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Goitre: Use and Abuse of Thyroidectomy and Iodine*

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The progress of goitre therapy has advanced with marked strides. Today, thyroidectomy, especially in those not suffering with Graves's syndrome, is a comparatively riskless procedure. Moreover, the resulting scar is almost invisible, an eloquent evidence of perfected surgery. Basal metabolic studies, formerly regarded as difficult and mysterious, are now the routine, and almost as commonly employed as the clinical thermometer. Thus, not only is diagnosis of thyroid toxicity made with precision, but the results of treatment are evaluated, and even prognosis can be discussed with intelligence by the aid of this laboratory device. In the field of prevention, the use of iodine seems likewise to be a boon to humanity, and whereas formerly a large percentage of school children seemed doomed to acquire goitre, the systematic administration of minute doses of iodine appears to succeed in reducing this percentage. The optimist has much to be thankful for in advances made in the control of thyroid conditions, a progress which is only comparable to that in treating diabetes mellitus.

These truths, however, cannot be stated unqualifiedly. As a result of a prolonged study of this problem, with clinical observations of over nine thousand goitre cases, I am forced to the conclusion that despite the perfection of thyroidectomy and the lowering of its mortality rate, this measure is often abused. Despite the use of iodine in the therapy of goitre, this measure, too, is largely abused, a fact to which I have called attention for some years, and to which others are now likewise calling attention. The perfection of goitre therapy can only be reached when thyroidectomy and iodine cease to be abused.

USE OF THYROIDECTOMY

Generally speaking, thyroidectomy is the only successful procedure in the treatment of goitre essentially neoplastic in nature. Such encapsulated tumors as adenomata, cysts, fibrous goitres, and various combinations of these, require thyroidectomy. Again, such unusual pathological conditions of the thyroid as diffuse adenomatosis, malignancy, and inflammations, usually require surgical attention. In toxic adenoma the surgeon is indeed the lifesaver of the patient. Parenthetically speaking, cures of toxic adenoma by thyroidectomy are frequently checked up in surgical statistics as recovery from exophthalmic goitre, an unfortunate circumstance leading to erroneous implications. Surgery performed on adenomatous and cystic goitres is not only productive of the desired cosmetic result, but is likewise a prophylactic against malignant changes, since it is well known that the vast majority of carcinomatous goitres occur secondarily to innocent neoplasms. It is here that thyroidectomy has its greatest use.

ABUSE OF THYROIDECTOMY

On the other hand, why do we observe so many instances of recurrence of goitre following even expert thyroidectomy? The answer is simple: Thyroidectomy was performed upon an unencapsulated thyroid enlargement in which the swelling was not a local condition but a manifestation of changes occurring elsewhere in the body. Nature resents thyroidectomy in simple thyroid hypertrophy, colloid goitre, puberty hyperplasia, and more especially in the hyperplastic thyroid of exophthalmic goitre (Graves's syndrome). It is these four types—not truly neoplastic in nature, but nonencapsulated thyroid swellings, that should be designated as nonsurgical goitre. Surgery here is usually a failure, and regeneration of goitre following thyroidectomy is very frequent. Unless the mass is substernally located, or presents an adenomatous or cystic admixture, these four types of thyroid enlargement require nonoperative measures by the medical attendant who is well enough equipped to seek and eliminate individual cause and eradicate the thyroid enlargement by methods tried and proved successful. Unfortunately, the number of internists capable of effecting recovery, especially in sufferers from exophthalmic goitre or Graves's disease, is not great enough to offset the psychology of immediate though temporary results produced by brilliant thyroidectomists, and so the abuse of thyroidectomy will probably stay with us for a while.

USE OF IODINE

Iodine stands foremost among drugs discussed in the treatment of goitre. No one questions its efficacy in the prevention of a large number of goitres in so-called endemic districts where it is proved that there is a deficiency of iodine in food, air, or water. Also there is no doubt of the curative value of iodine in a percentage of small goitres occurring in these districts. On the other hand, very considerable harm is wrought by undue enthusiasm on the part of the protagonists of iodine therapy, with resulting indiscriminate use of this drug by busy general practitioners, and even by the laity. Things have come to such a pass that at the recent meeting of the American Association for the Study of Goitre[1] the members went on record as being opposed to the use of iodine as it is employed today.

ABUSE OF IODINE

Greater conservatism in the use of iodine would be exercised if it were borne in mind that, 1, iodine is a potent drug, to be employed only after very careful study of the case in hand; 2, endemic goitre is not necessarily due to iodine deficiency, but as McCarrison and others have pointed out, to unhygienic surroundings, microbic infection of food or water, and many other factors as well; 3, areas regarded as goitre belts likewise present sporadic goitre, which is rarely due to iodine deficiency but often to such complex causes as heredity, infectious foci, intestinal autointoxication, the premenstrual status, adoles-

*Address delivered before the Williamsburg Medical Society, Brooklyn, February 8, 1926. (From the Bram Goitre Institute.)

[1]At this meeting (Louisville, Kentucky, February 3, 1926) and at the preceding annual meeting (Bloomington, Ill., January 29, 1925), I had the pleasure of addressing the organization, and in discussion with a large number of the members, I found almost universal antagonism to iodine therapy, even in socalled goitre belts.

cence, pregnancy, the menopause, and diseases of the gonads, all of which can hardly be cured by the administration of iodine; 4, clinical results prove that iodine employed indiscriminately is capable of making small goitres larger and simple goitres toxic; and 5, since the publicity given iodine as a remedy for

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 1.—Mixed hypertrophy and colloid goitre, three years' duration. Goitre had become enormous under iodine medication.
Fig. 2.—Restoration of thyroid to normal within ten months of nonoperative treatment, without iodine.
Fig. 3.—Colloid goitre of several years' duration, which had become much larger under iodine medication.
Fig. 4.—Complete disappearance of goitre within three months of nonoperative attention, without iodine.

goitre, we have had more goitres, especially toxic, in our midst, than ever before.

In colloid goitre, how can one expect to clear up the mass through iodine, when this drug is known to bring about an increase in colloid? This is why many colloid goitres treated with iodine become larger and produce pressure symptoms and occasionally symptoms of hyperthyroidism. Simple thyroid hypertrophy likewise becomes larger in many instances when treated by iodine, approaching colloid goitre in size by sheer increase of colloid content.

To those who would advocate thyroidectomy in the treatment of exophthalmic goitre, the preoperative use of iodine is useful, tending to lower the operative mortality rate and reduce postoperative crises. Since iodine tends to cause a reversion of the hyperplastic goitre to the colloid state, there is a reduction of thyroid toxicity. But this is temporary. Unless the sufferer from Graves's disease is luetic, the continued use of iodine with a view to cure leads to disappointment. While a large portion of the thyroid ceases to be hyperplastic, a sufficient remainder becomes more toxic than ever, ultimately leading to a clinical picture of crisis. The thyroid, a detoxicating organ, has enough to do to fight the known and unknown poisons in the patient's economy; is it any wonder that the addition of another potent poison, iodine, is met with resentment? The continued use of iodine in a Graves's disease subject may lead to a condition even more dangerous than a crisis. The resulting colloid infiltration may cause the goitre to increase to such a size as to endanger

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 5.—Exophthalmic goitre of eleven years' duration with extreme tachycardia, marked weakness, high basal metabolism, loss in weight, exophthalmos and emotional disturbances.
Fig. 6.—Recovery under nonoperative attention. Goitre, exophthalmos, tachycardia and nervousness disappeared, with complete restoration to health and usefulness.
Fig. 7.—Very toxic exophthalmic goitre of two years' duration, with all the typical subjective and objective signs and symptoms, and very high basal metabolism.
Fig. 8.—Recovery of patient with gain of twenty pounds in weight and restoration of heart, eyes, thyroid, metabolism and nervous system to normal.

life through asphyxia. I have seen several such instances requiring emergency thyroidectomy.

SUMMARY

Briefly stated, the treatment of goitre amounts to this: when to thyroidectomize, when to use iodine, when to use x rays, and when to use other measures. Through scientific and lay periodicals the profession and laity have unfortunately been accustomed to regard goitre as a lump on the neck requiring either operation or iodine for its removal. This state of mind hinders progress. Simple hypertrophy, colloid goitre, puberty hyperplasia, and the hyperplastic thyroid of exophthalmic goitre, are local expressions of erroneous processes of more or less complex nature occurring elsewhere in the body. Unless these processes are corrected, neither thyroidectomy nor any other local procedure will cure the "lump."

Especially is this true of exophthalmic goitre where, aside from the hyperthyroidism (or is it dysfunction?) of the thyroid, there occurs hypofunction of the pancreas, posterior pituitary, parathyroids, suprarenal cortex, and gonads; hyperfunction of the thymus, anterior pituitary and suprarenal medulla; there is a dysfunction of the vegetative nervous system, in which now sympatheticotonia, now vagotonia dominates the clinical picture; and the emotional centres are constantly in a state of abnormal alertness. Add to this the fact that sufferers from Graves's disease have had a lifelong neuroendocrinopathic makeup, how can we expect genuine recovery of this most complex syndrome by the mere cutting off the lump on the neck?

The time has come when men who treat goitres in great numbers should get together and compare notes. There should be a purging of preconceived notions, an elimination of pet hobbies, and especially a foresight that will substitute for immediate results with mere improvement of the patient the more important consideration of complete, permanent recovery with unequivocal restoration to health and happiness. It is thus that we will eliminate the goitre clientele from chiropractors, Christian Scientists, and other cults which are a reflection upon the medical profession and an affront to human intelligence.

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The Diagnosis and Treatment of Goitre

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The subject of goitre is complex, but the problem of prevention and treatment has become such as to require the universal application of the same general principles. The opinion has been expressed that goitre as seen in New York state differs from that seen in Wisconsin or other middle or far western states. This idea has been ill founded since an adenomatous goitre seen in one section of the country is pathologically the same as that seen in another locality. That the incidence varies in different regions is not disputed. For instance, the number of girls afflicted with colloid goitre in New York city is much less than the number having goitres in Syracuse and other parts further inland. In Wisconsin seventy-five in every hundred young women in some districts have colloid goitres. This high ratio is observed in many middle and far western states. In the great northern half of the United States from the Atlantic to the Pacific, however, there are few localities that are not concerned with the problems of goitre. Not only villages, but cities and even states are now taking up the fight to check the spread of this disease.

Tuberculosis and cancer combined affect a small portion of our population as compared with the millions suffering from goitre. Until the past few years the spread of goitre has been such that if unchecked, conditions might in time resemble those in Switzerland, where statistics have shown that one of every six recruits for the army has been rejected because of a goitre or some disease due to goitre. Certain it is that there has been a rapid increase of goitre in the younger generation. The incidence of cretinism and feeblemindedness has likewise been on the increase. It is fair to assume that if the spread of goitre is not checked, future generations would give rise to much higher percentage of these diseases. In Switzerland, where goitre has prevailed for many generations, there has resulted a great number of mentally deficient children. Consequently the problem that concerns us is not one of merely local interest but of national importance. It is a question not only of serious social but of economic loss as well.

In order then that various sections of the country may not only develop plans for prevention but may also compare the results of treatment, it is essential that there be a common understanding regarding the classification and treatment of goitre. Probably more mystery has surrounded this subject, not only in the minds of the people but in the profession as well, than any other topic in medicine. For years the text books and medical schools have offered such complicated classifications of goitre and such ill founded theories as to treatment, that the majority of physicians have been either sorely perplexed or in utter disagreement.

It remained for Plummer to clear up a great deal of the confusion that has surrounded this subject. When he clearly showed in 1913 that exophthalmic goitre and toxic adenoma were two distinct clinical entities, he at once greatly simplified the question of diagnosis. Yet his deductions have been slow to permeate and it has only been in recent years that this differentiation has been generally appreciated. Even today some of our leading authorities as well as many in Europe do not acknowledge or appreciate the importance of Plummer's classical studies.

In order, then, properly to diagnose and treat goitre one must have a clear understanding of a simple classification of thyroid diseases. Such a classification is suggested as follows: 1. Colloid. 2. Adenomatous; a, nontoxic; b, toxic; c, iodine hyperthyroid-

ism. 3. Exophthalmic. Other diseases: tuberculosis, syphilis, actinomycosis, myxedema, hypothyroidism, and thyroiditis (acute, chronic, purulent).

We are at present concerned only with goitre, and will outline the main diagnostic points.

Colloid goitre.—This type of goitre is commonly seen in girls between the ages of ten and twenty throughout the goitre area. In some districts as high as seventy-five per cent. of the girls between the ages of sixteen and twenty show rather marked symmetrical enlargement of the neck. In former years this abnormal condition was frequently termed a physiologic enlargement and parents were frequently advised by their physicians to disregard this condition which in time would disappear. In spite of the great increase of knowledge on this subject, I see almost daily instances where this same advice is being given. It is true that a small number, possibly twenty-five per cent. of these colloid goitres, do recede after the period of full growth and development has been attained. In the remaining neglected colloid goitres, however, there develop adenomas, an effort on Nature's part to compensate for the unsatisfied demand upon the thyroid for thyroxin by the body tissues. Consequently to safeguard against the development of adenomas, every girl living within the goitre area should be placed upon prophylactic doses of iodine, even though there is no apparent enlargement of the gland. There is no harm in giving such treatment to boys, and it is especially indicated in developing colloid goitres.

There should be little difficulty in differentiating the colloid from the other types of goitre. Occasionally one is called upon to rule out a possible beginning exophthalmic goitre. The gland is symmetrically enlarged in both types, the patient may be nervous, complain of palpitation and tachycardia, weakness, insomnia and may even present a tumor. Exophthalmic goitre may be eliminated by the absence of characteristic points in the history. A rather rapid weight loss accompanied by a good appetite is typical only of exophthalmic goitre. In the latter condition only may be found thrills, bruits, a high pulse pressure, exophthalmos, a true quadriceps weakness, and a peculiar type of restlessness and nervous instability. The basal metabolic rate may register twice or even three times normal at a first test in a nervous young girl, but if accurately determined and checked it will be found to be constantly high and increasing in exophthalmic goitre.

More can be accomplished in the prevention of colloid goitre than in the actual treatment of this condition. Consequently, if results are to be satisfactory, treatment should be begun at the age of eight or ten. Small doses of iodine should be administered weekly throughout the school year. In my experience the iodostarine tablet containing ten miligrams of iodine has given the most satisfactory results. When the colloid goitre has actually developed it will be necessary to double this dose. The old custom of administering iodine in the form of unpalatable liquids, large tablets or by local application, in large doses and for short periods of time is passé. There is no objection to giving children salt containing iodine, but iodine should not be administered in wholesale form to the people. It has been my policy to urge that iodine in some form be given to every child in the goitre belt, but that the child be under the observation of his family physician while taking the medicine. Some health workers who do not happen to be physicians are urging iodine on the people in any and every form, telling them it is a food and not a drug. I should like to introduce them to some of the patients with iodine hyperthyroidism I have had to treat.

Adenomatous goitre.—This type of goitre usually makes its appearance between the ages of twelve and twenty in neglected colloid goitre. There is an asymmetrical enlargement of the gland; one or more nodules may be palpated. I believe that all adenomatous goitre have their inception during youth, although they may not become apparent to the patient until in later life. Once an adenoma has developed, all the iodine in existence or any other form of medicinal treatment will not remove it. I realize that this statement is in contradiction to a view that has been generally taught and accepted. Otherwise why have so many members of the profession persisted in giving iodine to persons with adenomatous goitre? Merely reducing the size of the goitre by causing the colloid to melt away should not be sufficient grounds for risking iodine hyperthyroidism.

In children, when adenomatous goitres have already developed, iodine may be given in small amounts. They should be observed at least every three months. In these cases iodine may serve to retard and check the growth of the adenomas by placing the gland at rest.

The various types of goitres classified in text books as cystic, calcareous, hemorrhagic, etc., are all merely degenerations of the adenomatous goitre. Several changes may be found in the same goitre.

Because of the fact that about two cases in every hundred become malignant, because one in five becomes substernal, causing pressure symptoms, and because in time about fifty per cent. become toxic, I advise that all adenomatous goitres of any size should be removed after the age of twenty-one. Because of pressure symptoms or disfigurement it may be necessary to operate before this age, but there is an increased tendency to recurrence.

Toxic adenomatous goitre.—If left alone, adenomatous goitres seldom give rise to toxic symptoms before the age of thirty-five. The average age at which toxic symptoms appear is forty-four. About one in every four adenomas becomes toxic before the patient reaches fifty years of age. An adenoma is present an average of sixteen years before the onset of toxic symptoms. These symptoms develop so slowly and gradually that the patient may not be aware of anything serious until permanent damage to the cardiorenalvascular system has occurred. Myocardial degeneration occurs frequently.

The history of these patients shows that there is gradual progressive loss of weight and strength. There are occasional attacks of palpitation and tachycardia. Nervousness to the point of insomnia may occur. A tremor is always present. Exophthalmos never occurs. Thrills and bruits are absent. A progressive hypertension occurs. The basal metabolic rate averages thirty-eight per cent.

Treatment in these cases is surgical, providing the damage to the vital organs has not progressed to such an extent as to preclude the probable chances of recovery. Careful examination should be made of the heart and kidneys, and the patient's general

condition should be built up as far as possible by palliative measures. Every case that I have operated upon has been digitalized before operation, although I am aware that considerable difference of opinion exists on the advisability of this procedure.

These cases carry the highest surgical mortality of any goitre operation, the mortality rate ranging from one to ten per cent. Patients who recover invariably gain in weight and strength and greatly improve. The damage that has already occurred cannot be repaired but only checked. If every patient with an adenomatous goitre was operated on before the age of thirty, toxic adenoma could be eliminated from our classification.

Iodine hyperthyroidism.—I have applied this term to the toxic condition that may occur when iodine is administered to an adult having an adenomatous goitre. This toxic state was recognized by Kocher, who warned against the promiscuous use of iodine, because in many ways this condition resembled exophthalmic goitre, or Basedow's disease. Breuer called it iodine Basedow. Consequently, it has generally been confused with exophthalmic goitre and this is largely responsible for the widespread fear of using iodine in exophthalmic goitre.

In a recent series of articles I have endeavored to show that this condition is a distinct clinical entity. It occurs only in patients with adenomatous goitres. The average of the patients in my series of cases was thirty-five years. Tremor, nervousness, loss of weight, tachycardia, loss of strength and insomnia occur as in other forms of hyperthyroidism. The onset of symptoms, however, closely resembles that of exophthalmic goitre because of its short duration, that is, about two months. There is a peculiar characteristic type of nervousness, an extreme restlessness and lack of cooperation that may go on to fatal delirium. There may be a rapid loss of weight, as much as fifty pounds in two months. It does not resemble exophthalmic goitre either in the clinical or pathological pictures. Thrills, bruits, and exophthalmos do not occur. The basal metabolic rate average thirty-one per cent. in a series of fifty cases previously reported.

In the early stages these patients may respond to medical measures and gradually quiet down. In the majority of patients thyroidectomy will be found necessary for relief of symptoms. In this series there were three deaths, one surgical.

Intrathoracic and substernal goitres.—If the major portion of the goitre lies within the thoracic cavity, it is termed an intrathoracic goitre. This type is not common. It gives rise to pressure manifest clinically by cough, dyspnea, cardiac disturbances, dilated veins on the chest wall, etc. The x ray is a valuable aid in diagnosis. Surgical removal may be technically difficult. In order not to compress the trachea it should be freed as far as possible before attempting delivery of the goitre.

Substernal projections of adenomatous goitres are frequently encountered and may be troublesome because of the increased tendency to hemorrhage from tearing of the lateral veins.

Exophthalmic goitre.—This condition should be one of the easiest to diagnose and yet so varied are the clinical manifestations that patients so affected are treated for stomach trouble, heart lesions, hysteria, etc., until the disease is well advanced. It is possible only briefly to review a few points that aid in the diagnosis. The cardinal symptoms of exophthalmos, tremor, tachycardia, nervousness, and goitre have been fully appreciated for over half a century. The fact is not generally known that exophthalmos occurs in only fifty per cent. of the cases within the first three months. A variable and at times excessive appetite accompanied by a steady or rapid weight loss; a characteristic weakness of the quadriceps group of muscles; a high pulse pressure characterized by a low diastolic pressure; the presence of thrills and bruits; and a peculiar type of restlessness observed in no other disease are points that have proved of more value to me than the old time worn cardinal points.

The onset of symptoms in these cases is rapid, averaging months as compared to years in cases of toxic adenoma. The disease occurs more frequently in young persons, the average age being twenty-six.

Contrary to a generally accepted view, fever is present only during a crisis; hence, the oft discussed question of a differential diagnosis from tuberculosis should not be difficult. Exophthalmic goitre progresses by acute exacerbations and periods of remission. At the crests of these waves of hyperthyroidism all symptoms are intensified and gastrointestinal crises occur.

The introduction in 1922 by Plummer of the use of iodine as an aid to the surgical treatment of exophthalmic goitre has completely revolutionized the treatment of this disease. This advancement at once removed the greatest obstacle, hyperthyroidism, from the successful handling of these patients by the surgeon. Within forty-eight hours after receiving iodine, the restlesness, emotional instability and apprehension of these patients begin to disappear. Sleep is restored, the heart slows down.

I began using iodine in these cases early in 1923 and at once appreciated the great benefit to be derived. Although at first I proceeded cautiously, performing one or more ligations, I gradually eliminated the multiple stage operation entirely and have recently completed a series of one hundred primary thyroidectomies for this condition. It should be remembered, however, that the many other factors that go to make up a successful thyroidectomy were most favorable both from the viewpoint of teamwork, anesthesia, confidence of the patient, etc. Unless one has had considerable experience, he should proceed cautiously and slowly in this work and not rely too much on iodine to help him out of a tight situation. Complications, such as tracheitis, hemorrhage, pneumonia, anoxemia and injury to the recurrent laryngeal nerve, may occur at any time.

One of the most striking changes that occurs in these cases after the administration of iodine is the new pathological picture. In the first operation that I performed after using iodine I observed that technically the operation seemed much easier. The gland was not so friable and there was less tendency to hemorrhage. Microscopic study of these specimens revealed the fact that a transitory change had occurred, colloid replacing the areas of hyperplasia. Attention has been called to these studies elsewhere, and also to the fact that while iodine is useful as a preoperative measure it will not effect a cure.

Hepatic Extract

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Following the announcement by MacDonald (1) that extract of liver contains a substance which is capable of lowering the blood pressure, some further clinical confirmation of the encouraging results obtained by the Canadian investigator might be received with interest. Major (2) reported his general observations on a series of forty-two patients with hypertension and found that the best results were obtained in young persons without evidences of renal damage or arteriosclerosis.

The depressor principle used in the experiments here reported was obtained by subjecting a mash of fresh calves' liver to prolonged extraction with eighty per cent. alcohol. The filtrate was allowed to evaporate slowly. When the alcoholic concentration reached about ninety to ninety-five per cent., the precipitate which formed was collected and dissolved in distilled water. The amount of extract which neutralized the pressor substance contained in one cubic centimetre of a one to one thousand epinephrin solution was used as the unit of dosage.

In all thirty-four cases of hypertension were studied. In twenty-six the age was over forty-eight. Eleven were females and twenty-three were males. Gradual reductions in the systolic pressure ranging from thirty to one hundred millimetres of mercury with corresponding lowering of the diastolic pressure, were noted following courses of treatment varying from ten to twenty-four daily injections. In two cases with pronounced arteriosclerosis no lowering of the blood pressure could be effected.

Patients under treatment were quick to notice the improvement in their feeling of well being, the symptoms which were referable to the hypertension being rather promptly relieved. Vertigo, present in six cases, was benefited. Headaches (six cases), palpitation (four cases), intermittent claudication (one case), and anginoid pains (two cases) were improved. In five cases with evidences of rather marked renal involvement, there was noted a decrease in the albuminuria following the treatment. No untoward reactions or results, either during or after the treatment, were noted, although over seven hundred injections were given. All of the treatments were given hypodermically.

The cases here reported in somewhat greater detail were selected as those which had shown no response to the usually accepted dietary and medicinal treatment for hypertension; in fact, in several there had been a gradual increase in the blood pressure in the face of rigid treatment. The favorable response of these cases to treatment with hepatic extract would tend to confirm the efficacy of this agent.

CASE REPORTS

Case I.—B. H., male, aged fifty-four. Luetic aortitis. Wassermann four plus. Pressures 220-120. After two years' specific treatment the Wassermann test was negative but the pressures were 240-120. Ten daily injections brought pressures down to 140-80.

Case II.—T. H., female, aged twenty-eight. Post scarlatinal nephritis with hypertension. During the past four years, in spite of rigid diet and care, the pressures have increased from 140-80 to 180-110, with the urine showing two per cent. of albumin and many hyaline and granular casts. After seven injections of liver extract the pressures were 130-70. The pressures could not be lowered beyond this figure by seven additional injections although the albumin and casts in the urine appeared to be somewhat further diminished by the additional week's treatment.

Case III.—S. E., female, aged fifty-six. Chronic cardiovascular disease. Pressures 210-110. Daily injections of liver extract for three weeks brought pressures down to 140-85.

Case IV.—C. S., male, aged seventy. Pressures 200-130. Hypertension with beginning myocarditis. Severe attacks of palpitation. Injections of liver extract for twenty days brought pressures down to 150-100.

Case V.—D. C., male, aged sixty-eight. Arteriosclerosis with hypertension. Pressures 200-110. This patient was under treatment for six weeks. After seven injections the pressures were 150-95. The injections were then given twice weekly for five weeks during which time the pressures were never over 150-100.

Case VI.—C. M. R., male, aged fifty-eight. Hypertension with arteriosclerosis. Extremely nervous, irritable and dizzy. Pressures 220-140. Daily injections of liver extract for fourteen days brought pressures down to 145-85. An additional week's treatment produced no further change. There was marked improvement in the nervous symptoms and dizziness.

Case VII.—K. K., male, aged fifty. Simple hypertension with no symptoms. Pressures had been up to 220-130 at one time but were 180-110 when treatments were begun. After fourteen treatments the pressures were 145-85. Treatments were discontinued for one week at the end of which time the pressures were 150-85. After seven more treatments the pressures were 140-80.

CONCLUSIONS

1. Extract of liver contains a principle which is capable of reducing the blood pressure.
2. It exerts a favorable influence on the symptoms which result from increased blood pressure.
3. In thirty-four cases studied, there was a gradual lowering of the systolic blood pressure of from thirty to one hundred millimetres of mercury. Only two cases failed to respond to the treatment.
4. No untoward reactions or results were noted from its use.

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The Production of Mydriasis in Rabbits with Thyrotoxic Blood Serum and Adrenaline

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It is perfectly conceivable that in cases of hyperthyroid disease, either with or without exophthalmos, there is a toxic substance circulating in the blood. That there is an irritant to the involuntary nervous system in persons suffering from this disease is patent to everybody. Long was it considered that this irritant was derived from the thyroid gland (thyroxin). It, however, has been proved by numerous observers that this is not the case. Assuming that a toxic matter does exist in the blood of toxic thyroid cases I applied the serum from such a patient to the eye of a rabbit hoping that I might induce a mydriasis. The sympathetic is more exposed in this organ than anywhere else in the body of a rabbit as in other animals, and it is thus easier to observe it and to experiment on it than elsewhere. No dilatation ensued. Knowing that adrenaline when applied to the eye of an animal in which the sympathetic has been severed, with removal of the ganglia on the same side, produces, according to Landowsky, a mydriasis, this reagent was added to the toxic serum in the eye but produced no dilatation. Toxic matters irritating the sympathetic cause it to become sensitive to adrenaline. Attempts have been made by this method in the eye of frogs to detect toxic matters in body fluids, but without success. If a frog's eye is immersed in Ringer's fluid after being enucleated and adrenaline applied, mydriasis occurs. The sphincter pupillæ, Joseph found in the case of an eye partially or wholly enucleated, will relax if adrenaline even in the dilution of one to one hundred thousand is added.

Thinking perhaps that a stronger and longer contact with the sympathetic nervous system of the toxic serum with the assistance of adrenaline was necessary, one c. c. of the toxic thyroid serum obtained from a woman with marked hyperthyroid symptoms was injected into a rabbit. Shortly afterwards two drops of adrenaline solution (one to one thousand) at regular five minute intervals were instilled. At the end of forty minutes complete paralytic mydriasis occurred. The pupil did not react in the least to the bright light of a small electric bulb (ophthalmoscope) held a few millimetres from the cornea. The pupil of the other eye exhibited lively contractions.

It is best to perform this experiment in a darkened room. A complete reaction demands total mydriasis. The adrenaline should be instilled from the tip of an eye dropper held vertically; the upper lid should be rolled back by the thumb of the left hand, while the fingers encircle the throat of the rabbit.

This reaction does not begin to take place in toxic goitre cases until after the lapse of fifteen minutes after the subcutaneous injection of the serum; the latter should be kept in a cool place until used. In the short series of which will be given in detail in this communication the reaction took place after varying intervals of time and after varying amounts of adrenaline were instilled. The more toxic cases requiring fewer drops and the reaction became complete in a shorter time. The most toxic serum responded in forty minutes and required but a few drops of adrenaline as an adjuvant. A few controls were employed; many more are required to confirm the rather few findings of this investigation. One was a vigorous young man and the others with irrelevant diseases that were obviously nontoxic thyroid disease. No reaction was obtained by such sera. According to Loewi adrenaline occasionally induces mydriasis in persons ill with Graves's disease. This has been thought to be due to adrenalinemia. With this in view I injected into one rabbit .25 c. c. adrenaline solution (one to one thousand) and copiously instilled this same reagent into its eye without obtaining mydriasis. Stewart, employing strips of intestine and isolated uterus from a rabbit, was unable to detect any evidence of the presence of epinephrin in the blood of persons suffering with Graves's disease (1). Mydriasis may be produced in experimental hyperthyroidism (Falta, Eppinger, Rüdinger). I found (after devising the experiment described in this paper) that Kraus and Friedenthal noted that the blood of toxic thyroid cases produced mydriasis (sometimes) (Falta). But it is not related by what means or how, nor was adrenaline used as an adjuvant. Most of the cases of toxic thyroid disease coming under my observation have slightly dilated pupils from sympathetic irritation; in many other functional diseases of the nervous system this phenomena is, of course, common knowledge.

Recently Hyman and Kessel (2) declared in their article on Exophthalmic Goitre and the Involuntary Nervous System that "the involuntary nervous system may produce manifestations of exophthalmic goitre through the intervention of some unknown circulating sympathomimetic substance, . . . thus far attempts to demonstrate such substance in the blood circulating fluids have proved futile." Plummer, in discussing this paper, says, "Our present hypothesis attributes the latter (the phenomena that characterize exophthalmic goitre) to the action of a toxin, largely on the nervous system. This toxin may be an abnormal thyroid product or the reaction of abnormal thyroids on the tissues of the body."

The following cases are reported with detailed accounts of the experimental mydriasis or nonmydriasis, depending upon the properties of the blood serum employed.

Control: serum from Mrs. Sch., a married woman, aged forty-seven, neurasthenic, suffering much from depression and apprehensiveness, with no signs of hyperthyroidism or other thyroidal trouble, was injected into a healthy young rabbit. At each of the following times two drops of adrenaline were instilled into the right eye: At 10:09, 10:11, 10:16, 10:21, 10:26, 10:31, 10:36, 10:41, 10:46, 10:51 eye proptosed pupil slightly larger than left; 10:56, 11:1,

11:11 nictitating membrane retracted; 11:16, 11:21, 11:26.

Thirty-three drops or one c. c. adrenaline were instilled in right eye. Both pupils reacted to light; right was larger by about one millimetre, but there was no paralytic mydriasis; pupil in right eye was not immobile. Time seventy-seven minutes. This rabbit responded to the toxic effects of adrenaline by proptosis of the eyeball and a mild but not fixed dilatation of the pupil.

Control: serum from a woman aged sixty-one with indefinite symptoms of spinal sclerosis and no indications of any thyroidal disease.

At 10:02 one and a half c. c. serum injected into rabbit; at 10:07 two drops adrenaline one to one thousand instilled in right eye; 10:12, 10:17, 10:22, 10:27, 10:32, 10:37, 10:42, 10:47, 10:52, 10:57, 11:04 two drops adrenaline; 11:09, 11:14 three drops adrenaline instilled. At the end of sixty-seven minutes there was no mydriasis nor proptosis of the eyeball. After one c. c. of adrenaline the experimented pupil was very slightly larger than the untreated, but very mobile. The nictitating membrane was slightly retracted and looked paler and thicker than the one in the other eye.

Case I.—Mrs. P., aged forty-one, a nervous, unstable woman, given to weeping and other evidences of emotional imbalance, exhibited a large adenomatous thyroid. Her family history is important to the extent that her sister also had thyroid disease and died during an operation for its relief. Her own history is that of a married woman harrassed by the cames of a family, and with a poor nervous equipment. Toxic tonsils had been removed. Both lobes of her thyroid were the seat of neoplastic growth. She exhibited every symptom of toxic thyroid disease except the protrusion of the eyes and the usual concomitant signs of exophthalmos. She had a weak rapid heart with a pulse rate ranging over 140; in addition she had tremor of the tongue and hands but no mental symptoms; was apprehensive to a marked degree.

Three quarters c. c. of this woman's blood serum was injected under the skin of a rabbit and adrenaline in small drops slowly instilled into one eye of the animal. At the end of fifty minutes after the use of six drops (.20 c. c.) adrenaline one to one thousand, complete mydriasis occurred; the other eye exhibited lively contractions. The pupil of the experimented eye was so large that but a small rim of the iris could be seen. If larger amounts of adrenaline had been used at more frequent intervals it is likely that a prompter reaction would have appeared. After the lapse of two hours and seventeen minutes mydriasis was still present. This woman had a very toxic goitre. Since then a subtotal thyroidectomy was performed with recovery of the patient.

Case II.—Mrs. M—y, a middleaged woman, had a partial thyroidectomy done seven years previously and exhibited every sign of toxic goitre when seen, except the eye symptoms, having mental depression, anxiety neurosis, tremor of the hands and tongue. Her heart was weak and pulse rapid. Dr. Langdon, in whose practice this woman was, told me that all of her thyroidal symptoms had been precipitated by the sudden death of her child. After the injection of one c. c. of serum the instillation of twenty-eight drops (.85 c. c.) of adrenaline, mydriasis was complete in seventy-seven minutes. This case is not as toxic as the first one.

Case IV.—Mrs. P—t, a young Italian woman, aged twenty, married but without children, was seen with Dr. Langdon. She exhibited every sign of toxic thyroid disease, enlarged gland, tremulous hands, moist skin, rapid pulse 136, basal metabolism of plus 53, mental symptoms appeared now and then after fatigue.

One half c. c. of her serum was injected into a rabbit and seven drops of adrenaline instilled drop at a time at regular intervals for forty-two minutes; at the end of this period no mydriasis appeared. Then one half c. c. more serum was injected and in ten minutes two more drops of adrenaline were instilled. Mydriasis was complete after the lapse of sixty-nine minutes, with the use of nine drops (.27 c. c.). The dilatation had disappeared in 169 minutes.

Case V.—This case has been reported for the reason that notwithstanding it was one of marked toxicity no reaction was obtained, either because I did not use sufficient adrenaline, or because the patient had been under active medical treatment, ingesting large amounts of iodine and quinine daily, with great improvement in her condition.

Mrs. W., the patient, aged fifty-three years, had suffered for one year from toxic thyroid disease, which had supervened after a carbuncle on her neck had been cured. When first examined she had a fibrillating heart, which was decompensated and dilated, her legs were edematous and the cardiac impulse weak. She had a marked tremor, pulse of 130, even while under rest and digitalis. A Dalrymple sign appeared after she had been ill six months. Her basal metabolic rate was plus 17 and plus 34 on different occasions.

One c. c. of her serum was injected and eighteen drops (.56 c. c.) adrenaline instilled at regular intervals for seventy minutes at this time there was no mydriasis. This may have been prevented by the use of the drugs or insufficient adrenaline instilled as I have suggested.

Case VI.—Mrs. F., a tall gaunt woman very thin and neurasthenic and asthenic in every way, exhibited every sign of toxic thyroid disease two years ago. Then her pulse was very rapid, 140, her basal metabolism ranged from 38 to 80 plus. Under rest and digitalis this subsided to plus 15. Her thyroid was never enlarged nor were there any eye symptoms. An old subacute tuberculous lesion was evident in her right lung. In 1924 Dr. Frazer did a bipolar ligation of her thyroid arteries under gas anesthesia.

Her weight at this time was but eighty pounds, her height being five feet seven; she was but a skeleton. From this operation she slowly convalesced. Eighteen months later her weight had risen to 123. Her tremor had disappeared, her heart was strong enough for her to work all day as a dressmaker. Her pulse rate was eighty on several occasions in spite of excitement and at the end of a tiresome day. Symptomatically she is well, exhibiting no signs of toxic goitre in any way and being able to support herself.

One and a half c. c. of her serum was injected into a rabbit and two drops of adrenaline were instilled into its eye at regular intervals; after using twenty-eight drops (.85 c. c.) of this reagent and waiting

for 120 minutes there was no mydriasis. It can be inferred from this experiment and her examination that this woman now has no signs of toxic thyroid disease.

Case VII.—H., a child of eight, with a large adenomatous growth in her thyroid, was examined. She had no nervous or eye signs of hyperthyroidism, her weight was normal so was her pulse and heart. Thinking that an estimation of her basal metabolism would be of service in her case she was referred to the University Hospital; there this estimation proved to be normal. In fact there could hardly be a doubt as to the benign character of her thyroid enlargement. Six months later three quarters c. c. of her serum was injected into a rabbit, and adrenaline instilled, after the use of twelve drops of this reagent and after the lapse of 120 minutes, there being no mydriasis, it was concluded from this rather incomplete study and taking her clinical symptoms into consideration, that this thyroid was not in the least toxic and the reaction negative.

Case VIII.—Mr. W. W., a large strong, nonnervous man in excellent health, exhibited a large adenoma in the right lobe of his thyroid. He exhibited no signs of toxic thyroid disease, his pulse was 64, his heart strong and normal in every way, there were no eye or nervous symptoms. His blood pressure was 100-76, his urine normal.

One c. c. of his serum was injected into a rabbit and adrenaline instilled every five minutes into the animal's eye. In all twenty-four drops (.72 c. c.) were instilled. After the lapse of eighty-five minutes the pupil was sluggish. At the end of 120 minutes, an hour after the instillation of the last adrenaline, there was a fixation of the pupil in moderate dilatation; it did not respond in the least to a bright light, held for two minutes very near the cornea.

Case IX.—Mrs. D., aged fifty-one, referred by Dr. Harry Webber for examination and diagnosis. Her chief complaints were weak heart, swollen legs, loss of weight and neuralgic pains in her arms and back. She was at her menopause, the last menstruation having occurred about four months before her examination. Previously her menses had been regular and symptomless. Her past history was unimportant; she was the mother of three children and had the usual diseases of childhood, including scarlet fever; she also had suffered from tonsillitis as a young woman. Recently she had lost twelve pounds, looked anemic and below par. Her heart bothered her when she exercised, and she became dyspneic and weak. Her thyroid was obviously much enlarged. Her pulse was rapid, 140, weak, but regular. Her cardiac dullness seemed normal, impulse feeble, no murmurs near the apex but at the pulmonic area a socalled vasomotor murmur was heard. Her legs were edematous. The right apex of the lung was the seat of an old tuberculous process, now dry and symptomless. There were no toxic thyroid symptoms of her eyes, her forehead did not wrinkle on looking upward, the pupils were moderately dilated. On extending her fingers a fine tremor could be seen.

There was no tremor of the tongue. She had an anxiety neurosis and other mental symptoms. Her hands were moist and clammy. The diagnosis lay between a toxic thyroid with enlargement and neurasthenia with a weak heart. The thyroid was enlarged to the size of half a small orange in the isthmus, an adenomatous mass could be palpated. Except for her weak heart, enlarged thyroid and nonwrinkling forehead, all her symptoms might be classed as neurasthenic. Being at the menopause and having an adenomatous growth in the thyroid which might be nontoxic in character, and an old lesion in her lung, a diagnosis of secondary neurasthenia might be justified. No opportunity to make a metabolic rate estimation was at hand.

One c. c. of her serum was injected into a rabbit, two minutes after adrenaline instillations were begun, and continued every five minutes. At the end of twenty-two minutes and after the use of ten drops (.30 c. c.) adrenaline solution one to one thousand, complete mydriasis occurred. Dilatation of the pupil had disappeared in sixty minutes. The reaction, if it proves to be a specific one, means that this woman has a toxic thyroid and not a pure neurasthenia.

Subsequently a subtotal thyroidectomy was performed. She recovered slowly but completely. Her metabolism at the hospital was found to be plus 41.

One half c. c. serum of this woman's blood was heated to 58° C. for 140 minutes and then when cool it was injected into a rabbit. Mydriasis occurred after the lapse of twenty-eight minutes and the use of twenty-four drops or .72 c. c. adrenaline. From this solitary experiment with heated serum I infer that the toxic substance, if there is such a real entity, is thermostabile.

It is obvious that patients should not take belladonna or other mydriatic before the blood is drawn.

From experiments not related in this paper I am led to the conclusion that iodine in some way inhibits this reaction, perhaps by neutralizing the hypothetical substance.

If a conclusion can be drawn from these preliminary experiments with the sera from toxic and nontoxic thyroid cases, the following requirements then should be postulated:

1. One cubic centimetre of the suspected serum should be injected into a healthy rabbit.

2. The reaction cannot be considered to be negative unless one cubic centimetre of adrenaline solution, one to one thousand, has been instilled into one eye of the rabbit.

3. Complete mydriasis should appear within ninety minutes' time.

4. The quicker the reaction appears and the fewer the drops of adrenaline used, the more toxic the case and the more certain the reaction is.

It is quite possible that by the use of two c. c. of serum, instead of one, prompter and more definite results may be obtained.

SUMMARY OF EXPERIMENTS

I.	Cases in which there was no reaction:		
	Those without thyroid symptoms of any kind..	2	
	Those with nontoxic enlargements of the gland	2	
	Those with supposedly cured or arrested hyperthyroidism	2	6
II.	Cases in which there was a reaction:		
	Hyperthyroidism	5	5
	Total		11

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Other cases cited by the author have been omitted for lack of space. They will be included in the reprints.

Historical Medicine

The Legacy of Greece to Galen

1. The Elements of Matter

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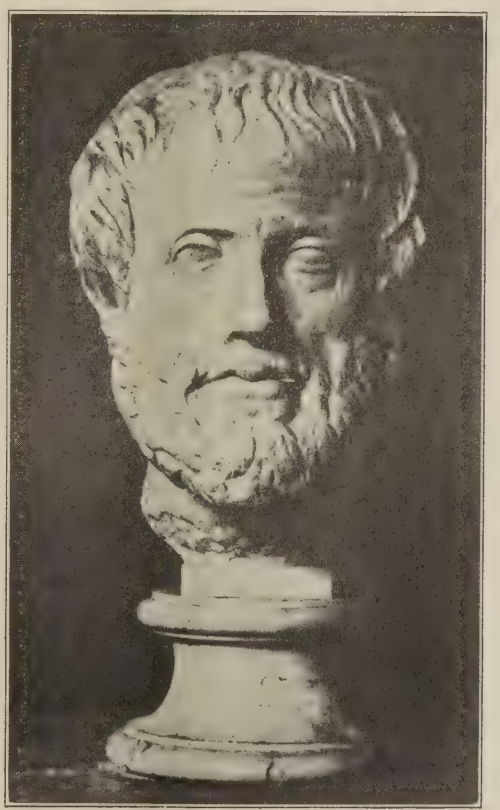
When we stop to consider that Galen was born nearly six hundred years after Hippocrates and that for nearly half that time there were no efficient methods of diffusing knowledge and only then by the public libraries at Pergamum and Alexandria; when we remember that Hippocrates was alive when Plato wrote, possibly when Aristotle was born; when, having these things in mind, we perceive how Galen on page after page of his interminable writings is quoting and referring to them, we get some inkling of the vigor of Greek thought in the fifth and fourth centuries B. C. This is impressed upon us quite independently of the realization of how much we owe to the legacy of Greece ourselves, how much we still live in its light. To us that epoch and that land is far away and misty and it is with an effort to fix our attention on the thought that sprang into life there and then. To Galen they were the breath of his intellectual life and the names that were associated with the lands he himself had traveled over and dwelt in were ever at his pen's point.



ARISTOTLE (Vienna)
(After Hekler)

In the first volume of Kühn's edition of his works there is a book on the *Elements of Hippocrates* (1a). Many a student of Hippocrates will have read his works without perceiving Hippocrates ever said anything about the elements of matter, unless he reads the spurious book, which Galen believes genuine, on *The Nature of Man*. For Galen it was the chief of the works of Hippocrates. From it he drew his inspiration for the humoral doctrine which fettered the thought of medicine for sixteen hundred years. We have good reason to believe this book was not written by Hippocrates II, but by some younger member of his family, very likely in the time of Aristotle, who definitely attributes the part on the anatomy of the veins to Polybus, his son in law. A modern critic remarks (2) that Galen had no real reason for thinking Hippocrates the author except his admiration for the doctrines set forth in it and I can not help thinking his admiration carried him so far occasionally as to put thoughts in his mouth he never thought, just as Plato laid things in the mouth of Socrates which Socrates is declared to have said he never had in his mind. Even Galen admits the parts after chapter X are spurious and the work neither of Polybus nor Hippocrates but of some Alexandrian. However, whoever was the author of the first nine chapters displays in them a mentality which we believe is so far below that of what are regarded by all critics as genuine, he could not have been the one who wrote the latter. Plato put words in the mouth of Socrates which the latter had no cause to be ashamed of, and if Hippocrates had come to life again after six hundred years he would have had a juster cause for complaint against Galen. Even if he thereupon confessed he was the author of *The Nature of Man* he might have denied some of it in Galen's version and that he twisted other things to absurd conclusions. As we go along we shall have occasion at least to intimate this.

We find Galen at the beginning of his commentary pointing out that Hippocrates was well aware the particles of the elements are smaller than the senses can appreciate. Democritus is said to have been born in the same year (460 B. C.) as Hippocrates. They are said to have corresponded and Hippocrates is said to have paid him a professional visit. The latter assertions rest on manifestly forged evidence, but even so we need not conclude that Hippocrates had this doctrine from Democritus. The extension *The Nature of Man* gives to the ancient atomic theory is not the product of one generation. It has every appearance of having evolved at a date later than the fifth century. The solid particles of the element earth when reduced to the finest powder all feel alike, but they are not alike and the same is true of other forms of the other elements. The author of *Ancient Medicine* or of *The Epidemics* I and III is not apt to have written that. Even if the derivation of monism from Melissus in the time of Hippocrates and Pericles is indicated by the mention of his name in *The Nature of Man* it is not a proof that Hippocrates wrote the latter. It is rather suggestive of some one in the time of Aristotle familiar with that particularly vulnerable form of monism gives it a slap

because greater men had shown it was indefensible.

Melissus it was who declared the "one" unchanging and infinite and this sprang from the opinions of the nature philosophers before him, some of whom had made one or the other of the four elements the ground form of the universe, but susceptible of change into the forms of the others. Melissus had it unchanging. Galen thinks if we must have this unity, it had best be unchanging and he alludes to Hippocrates casting a doubt upon the whole doctrine by remarking each philosopher had a different element as his base. Aristotle, too, he says shows up this foolishness in his work on the nature of hearing. I am at a loss to know if this is the *De Audibilibus* which the most recent translators (Oxford) of Aristotle think is spurious—probably by Strato. It is poor stuff at any rate, but I see nothing in it to bear Galen's statement out. The unchanging form of being, the Unmoved Mover of Aristotle, is purely metaphysical and it is just as hard to derive from Him naturally any one or more of the elements as it is from the conception of Melissus. However that may be, both Plato and Aristotle in their works virtually accept the monism of the ancient philosophy. Indeed Plato describes it and it is the essence of Aristotle's *Coming to Be and Passing Away*. It is in the little work on *Melissus*, usually edited with Aristotle's genuine works, that the theory of the unchanging nature of matter is attacked, but Diels and modern critics (3) think this work was written as late as the first century A. D. We may conjecture Galen was here speaking (1b) from memory and it misled him or that Aristotle was regarded by him not only as author of the work on hearing, but also of the one on Melissus. This does not seem likely if the book was of a date so near the birth of Galen. The treatise on Melissus is one of considerable merit and I do not see, as far as that goes, why Aristotle might not have written it and it is in the first chapter of this brochure and not in the first chapter of that on hearing that the doctrine of Melissus is shown, as Galen thinks, to be absurd.

After claiming Aristotle quite supports his view Galen goes on to say in the spirit if not in the words of *The Nature of Man* that if there is only one element and that common to all substance it would destroy the art of medicine, for there would be but one disease and one cure. In fact it not only destroys art but man himself. Aristotle and Hippocrates he thinks are in agreement on this point, but I don't believe the real Hippocrates ever thought that and I fail to remember that Aristotle in his genuine works draws such far reaching conclusions. As to such simplicity as one drug, any one glancing over the Galen pharmacology can see from its shotgun nature that it would be very difficult for him to cut himself down to one drug. Some of them are marvels in the way of multiplicity. Even with four elements they would seem to Galen very much less tractable to change than the ninety odd do to us, or, however many there may be when this commentary finds its way into print, but then no more than now, with four no more than ninety-four was it easy to find them unadulterated. "They exist unmixed in thy body no more than in that of any other animal"—and he makes sport of it. Fire is of the nature of air, but especially of the pneuma, and penetrates everywhere.

Athenaeus, the Attalian (of Pergamum?) reckons the qualities themselves as elements, the dry and the moist, the hot and the cold. They, too, were according to him elementary parts of the human body, "ridiculed with censure now by many and laughter not a little." It was criticized in the ancient arguments, but it is the natural tendency in an age when the corporeal was not yet clearly distinguished from the incorporeal, for that is the thought all ethnologists relate of primitive men. Indeed why should Galen jeer? Why should we? Is not heat motion? Is not motion energy? Is not energy merged with matter in the hottest stars according to the latest bulletin from them? Herr Mie (4), whom I have quoted elsewhere, only last year suggested there is no reason why matter should not disappear like the Cheshire cat and leave only the smile behind. But what else could Galen make out of Plato's Ideas as realities? Man and all that surrounds him are but shadows of realities. They may vanish and leave behind beauty, truth and justice, why not the hot and the cold, the moist and the dry? Monism indeed leads us into strange lands today, but they ought to have been more familiar to Galen. When he says (1c) and makes Hippocrates say if there were only one substance man would have no feeling, for us indeed he dwells in strange lands, for us whom Spencer has taught how out of the homogeneous the heterogeneous is born, but why is the surviving smile of the Cheshire cat ludicrously strange for us. Galen simply taps the reservoir of ancient argument, but we have no resource against the modern monistic physicist and astronomer. This ancient argument Plato and Aristotle developed, but I am not aware that they did so anywhere in the way Galen attributes to Hippocrates.

However, after all it may be essentially the same. Unless there is something opposite to it there can be no sensation. We must know the bitter to recognize the sweet. That is doctrine older than Plato. It takes two things at least to form the substance of matter we can recognize by the senses. The heterogeneous we might say begins to merge early from the homogeneous, but it is more in accord with ancient argument to say there must be the knowing thing as well as the thing known. Aristotle says there can be no image of an image. We may agree there seems no escape thus for the ancient and the modern. For the ancient, for Hippocrates, as interpreted by Galen, if there is a wet there must be a dry, if there is a hot there must be a cold. It is true the modern materialist sees at once, but it perhaps was not so clear to a world more steeped in mysticism than ours, that the analogy does not hold. I am not at all sure that Plato or Aristotle carries the argument thus astray, and if they did not, I am quite sure that Hippocrates did not, but Galen and the author of the book *On the Nature of Man* wear these sophisms threadbare.

He sets forth the doctrine of Democritus that the bitter and the sweet are conventional terms and that matter has no attributes, the true atom has neither heat nor cold. Essentially this is the basis of the doctrine of Protagoras. For men the words black and white have a meaning, but they have no application to elementary normal substance, neither the bitter nor the sweet, not the hot nor the cold. So far

as these are concerned the atom is a vacuum. By a vacuum, however, the ancient meant space, the void, where the elements are borne up and down and round about through all eternity and woven together with one another and strike against one another and rebound from one another. Time and space, however, did not exist for Aristotle aside from matter any more than it does for the modern physicist, but for others, as for Galen, it was something that separates and unites the atoms. Lodge and the etherists, Einstein and the relativists, had their prototypes before Galen and perhaps Hippocrates belongs among the dualists, but outside of *The Nature of Man* we get no intimation of it and it is the belief of most critics that Galen made him responsible for that which he at least had not thought out.

It is very probable that in the later life of Aristotle the scientific thought of Greece had analyzed the arguments and had reached the development views of this kind had initiated, but much of this in the way of confirmation or denial lay in the germ in the time of Hippocrates, just as much of the thought in today's physics was still in the germ before Sir Joseph Thomson split the atom. On comparing *The Nature of Man,* as it exists in the Hippocratic Corpus today, with this commentary of Galen on it, we not only take note that he has apparently committed an anachronism, but he has gone beyond the development of the matter as it exists in the text we have of the Hippocratic work. Epicurus may have visualized matter stripped of attributes or may have thought he did in Aristotle's *Unmoved Mover* but not of such matter this side of metaphysics. The *Timæus* of Plato makes even the mystical Receptacle impressible and these are doctrines later than Hippocrates unless we get a line on them in those ascribed to Protagoras by the Platonic Socrates. Galen emphasizes the view he ascribes to Hippocrates that if matter were all one there would be no opposite sensibles for the senses to work upon. This form of the argument seems to be the later consequence rather than the basis of the views either of Democritus or Protagoras, but we find Galen thus up to his neck in the Greek thought of an era half a millenium behind him and it behooves one with five times that space of time behind him to be much less sure he has grasped it. Others have, far better than I can hope to do, discussed the authenticity of the books of Hippocrates. Truth, they say, is stranger than fiction. History is, anyhow, and there is often—usually you may say in one sense which I will not stop to develop here—more truth in fiction than in history, so why disturb the smug conviction that Hippocrates never wrote nonsense, and that Socrates was the wisest and best and most lovable of men? Ideals, at least sometimes, are worth more than the truth.

It is doubtless true that the absurdity of supposing man's senses were coeval with the birth of matter was not so apparent in the days of Hippocrates or even in those of Galen as today. The doctrine of evolution may not be all true or all the truth, but it has helped the thought of man on its way to getting a better grasp on the truth. What can you say better of a theory? The doctrine of evolution and the revelations of physics in modern days have convinced reasonable men that the unfolding of the universe to man has been keeping step with the evolution of the sense organs and the deepening of the cerebral sulci. Even as early as Hippocrates he could be expected, as Galen needlessly declares, to distinguish between a man and a stone, because man feels and inanimate material does not. If he were made of one element he would not feel, but why should a mystic mention that it requires a mixture of the elements thus to insure consciousness? Whether that or its archetype in ancient science, the soul, is associated with one element or a dozen, it remains a mystery still. But Galen goes on to say the atoms of flesh must have sensible attributes, otherwise man would not feel when a needle's point touches only one atom. I have not looked it up, but I don't think Hippocrates ever said anything like that. For a moment it confuses our minds, we are lost not so much by the vacillation of the argument as by the realization that an atom for Galen does not seem to be indivisible and at any rate is not our atom at all. An atom had for him here an attribute he could understand by an appeal to sense and manifestly from his previous argument an atom must be made up of two or more elements. I am not going to shout across the ages at Galen as he does at Chrysippus or apostrophise him as he does Asclepiades and Erasistratus, but bewildered take note that for him sensation seems to be an alteration in the state of matter. At least this leaves us undismayed.

We get an echo of the mysticism of Aristotle, unacknowledged by Galen, in the assertion (1d) that "although there may be sensibility in capacity, in energy there may not be at all." Actually we may not hear but the capacity for it may exist. Aristotle meant something more than that, he meant attributes of matter may exist independent of man's sense of them. He is by no means always consistent in this, but as I remember he seemed to think sound would exist even if there were no ears. One hesitates to impute anything so puerile in thought to Galen, much less to Aristotle, but Galen seems to confuse capacity with man's having an organ of hearing and Aristotle seems to confound sound with the impact of shocks of matter on the air. As I have intimated others have written more wisely on Aristotle and Galen than I, at least more confidently. It seems clear, however, that Galen believed that the elements of matter each one by itself have no attributes, but the mixture of them does and he ascribes this view of them to Hippocrates. Notwithstanding his bewildering remark about a pin's point and the atom further on in his essay he thinks not only do the atoms have no sensibility, but they have no memory or recollection, no imagination, for sensibility is at the root of these. If none of these then it has none of the other attributes. An atom has no soul, but a collection of them does. We had an echo of Aristotle at the beginning of this paragraph and I end it with this echo from the *Timæus* of Plato. In the fabrication of the soul in the Receptacle God or his demiurge mixes the elements of matter with the divine.

Then we return to Galen's objection, which he says was also that of Hippocrates, we grasp easily enough the difficulties. In order for feeling to exist there must be something felt. These are two at least. There can be no image of an image, Aristotle objected to Plato. Matter must be multiple. Thus we find the horns of a dilemma from which there is

no escape in monism. In all ages of philosophical thought they have existed. All evidence points to monism. All reason rejects it.

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Contributors to the Science of Medicine

William Hunter

William Hunter, an elder brother of John Hunter, is somewhat overshadowed by the fame of his younger brother, but the claims of William Hunter to live in the memory as a great contributor to medical science are unassailable. His brother was more original and may be regarded as the greatest pathologist and one of the greatest comparative anatomists of perhaps all time. William Hunter was also a very great anatomist and did much to revolutionize the study of the subject to add to the knowledge of anatomy and place it on a solid basis.

As Dr. Peachey in his remarkably able memoir of William and John Hunter says, "In his examination of Scottish intellect during the eighteenth century, Buckle, the historian of civilization, after reviewing the philosophical works of Francis Hutcheson, Adam Smith, David Hume and Thomas Reid, and the scientific labors of Joseph Black in chemistry, of James Hutton in geology, of James Watt in mechanics, and of William Cullen in medicine, sums up by saying: 'I have now only one more name to add to this splendid catalogue of the great Scotsmen of the eighteenth century; but it is the name of a man who for comprehensive and original genius comes immediately after Adam Smith, and must be placed far above any other philosopher whom Scotland has produced; I mean of course John Hunter.' "

Dr. Peachey further points out that among men of outstanding ability selected by Francis Galton to illustrate his theory of the transmission of hereditary ability may be found in the first degree the name of John Hunter, and on a lower plane the names of his brother, William, his nephew, Matthew Baillie the pathologist, and his niece, Joanna Baillie the poetess. Galton also found that most of his selected men of science were nurtured by able mothers, and we know that Mrs. Hunter was a "woman of great worth and considerable talents."

In connection with medical and surgical science and progress it may be pointed out that the Scotch have been always foremost, perhaps, especially so in anatomy and surgery.

William Hunter was born on May 28, 1715, at Kilbride, in the county of Lanark. He was the seventh of a family of ten children whose parents, John and Agnes Hunter, resided on a small estate in the parish named Long Calderwood. At the age of thirteen years he was sent to the University of Glasgow where he passed five years, distinguishing himself as a good and diligent scholar. His father desired him to enter the church but the liberal views that he had imbibed at the university gave him an aversion for theology. It is stated that five years' study of theology produced upon his mind an insuperable distaste for the ministry.

At this time he chanced to become acquainted with Dr. Cullen, the well known Edinburgh professor, and this determined him to enter the medical profession. Late in 1736 or early in 1737 he went to reside with Dr. Cullen who had then left Edinburgh and was established in practice in Hamilton near Glasgow. He remained for three years in Hamilton when he went to Edinburgh for the winter session of 1740. Reachey says at the end of 1739. In the summer or autumn of 1741 he arrived in London and at first lived at the house of Dr. Smellie, an apothecary in Pall Mall.

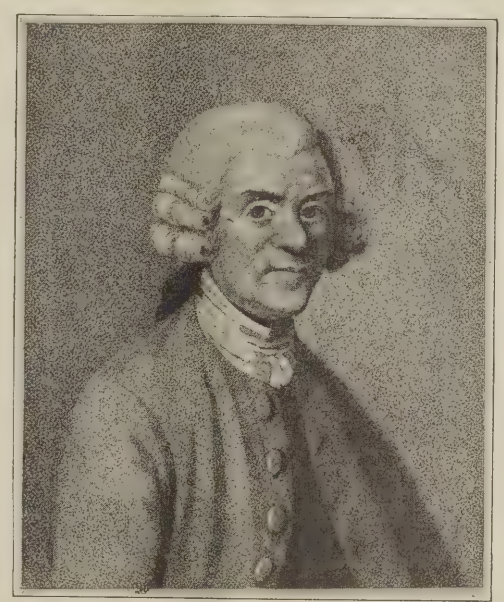
Hunter had brought with him a letter of introduction to a fellow Scot, Dr. James Douglas, who was then intent on a work on osteology and was looking out for a young man as a dissector. He invited Mr. Hunter to become a member of his family, to assist in his dissections and to assist in the education of his son. Having accepted this offer, by the influence of Dr. Douglas he was enabled to enter as a surgeon's pupil at St. George's Hospital under Mr. James Wilkie and as dissecting pupil under Dr. Frank Nichols, who had a considerable reputation as a teacher of anatomy. Peachey says that there is no record of William Hunter having been an apprentice at St. George's Hospital but there is no doubt that he was a pupil there. He soon became an expert dissector. Dr. Douglas died on April 2, 1742, but Hunter continued to live with the doctor's family although, as Peachey says, his doings during the remainder of 1742, after the death of Dr. Douglas, and until the autumn of 1743, cannot be traced in detail, and according to Peachey in September, 1743, Hunter went to France with young Douglas.

In 1743 he communicated to the Royal Society an Essay on the Structure and Diseases of Articulating Cartilages. His object at this period of his career was to teach anatomy and he prepared himself thoroughly with this end in view. He spent several years in acquiring knowledge of the subject and in collecting anatomical specimens. At this time a society of navy surgeons had a house in Covent Garden where they engaged a Mr. Sharp to give a course of lectures on surgical operations. Mr. Sharp, finding that this work interfered too greatly with his practice, resigned in favor of Hunter, who gave so much

satisfaction that he was requested to extend the course to embrace anatomy.

He was remarkably successful as a lecturer. In 1747 he was admitted a member of the Corporation of Surgeons and in the spring of the following year set out in company with his pupil, Mr. James Douglas, on a tour through Holland to Paris. He continued his winter course of lectures on his return. At first he practised both surgery and midwifery but later specialized in midwifery. He was elected one of the surgeon man-midwives, as they were termed, first to the Middlesex Hospital and soon after to a similar post in the British Lying-in Hospital. It was not long before Hunter had established his reputation as the first authority on midwifery in London. In 1750 he gave up surgery, obtained the degree of M.D. from the University of Glasgow, and began to practise as a physician.

In 1755, on the resignation of Dr. Layard, a physician of the British Lying-in Hospital, the governors of that institution voted their "thanks to Dr. Hunter for the services he had done the hospital, and for his continuing in it as one of the physicians." In the following year he was admitted a licentiate of the Royal College of Physicians, and soon after was elected a member of the Medical Society. Peachey says that William Hunter became a member of the Society of Physicians in 1754. His *History of an Aneurysm of the Aorta* appears in the first volume of the society's *Observations and Inquiries,* published in 1757. In 1762 he was appointed physician extraordinary to the Queen.



WILLIAM HUNTER

In April, 1767, Dr. Hunter was made a Fellow of the Royal Society and in the following year communicated to that learned body *Observations on the Bones,* commonly supposed to be elephant's bones which have been found near the River Ohio in America. This, however, was not the only subject of natural history on which he used his pen, as in a subsequent volume he is found offering *Remarks on Some Bones Discovered at the Rock of Gibraltar.* In 1768 Dr. Hunter became F.S.A. and in the same year, at the institution of a Royal Academy of Arts, he was appointed to the post of professor of anatomy. In January, 1781, he was elected unanimously to succeed Dr. John Fothergill, as president of the Society of Physicians of London. He had now a world wide reputation. In 1780 the Royal Medical Society of Paris elected him one of their foreign associates and in 1782 he received a similar mark of distinction from the Royal Academy of Science in that city. His great literary scientific effort was published in 1774 *The Anatomy of the Gravid Uterus.* He also communicated to the Royal Society an essay on *One of the Origins of the Venereal Diseases.*

In 1770 he erected a large house in Great Windmill Street. In this building in addition to a spacious amphitheatre, and other rooms for his lectures and dissections, there was one very large room used as a museum in which was placed his very large anatomical collection. Before he removed to Windmill Street he had confined himself chiefly to collecting specimens of human and comparative anatomy but afterwards his views became more catholic and he gathered fossils, books, coins, shells and various other specimens of natural history. On March 30, 1783, he died from gout from which he had suffered for several years.

The demonstration of the lacrimal ducts in man was achieved by William Hunter in 1747. The demonstration of the tubuli seminiferi was completed by William and John Hunter in November, 1752, and by Monro in Edinburgh in January, 1758. The demonstration of the condition known as congenital hernia was carried out by the Hunters in 1756, acting on a suggestion made by Haller in the previous year.

After publishing his *Treatise of Ruptures* in the following June, Pott, one of the great surgeons of the day, of Pott's fracture fame, called that winter and examined the preparations at the dissecting rooms in Covent Garden which were explained to him by John Hunter himself. Yet in March, 1757, when Pott published a monograph on the subject, he did not mention the Hunters on the preparations he had seen. The discovery of the absorbent system was much more important. Indeed Peachey states, that after Harvey's discovery of the circulation, it ranks as the greatest achievement in physiology in all time.

In his first course of lectures, in 1746, William Hunter explained his views that the lymphatics were not continuations of the arteries, as was then held, but that they were absorbent vessels, commencing in all the external and internal surfaces of the body. In 1752-3 Alexander Monro, Jr., had been able to confirm by experiments what William Hunter had been teaching for six winters, and in October, 1755, he published a short abstract of them in his Edinburgh thesis, *De testibus et semine in variis animalibus.* He then came to London in November, attended William Hunter's lectures, and went on to Berlin, where, early in 1757, he published *De venis lymphaticis valvulosis,* without mentioning William Hunter, though referring to every other writer on the subject. On his return journey he called at Hunter's house in Jermyn Street when, as William asserted, "I was reading my lecture at Covent Garden, that is when he was certain I was not at home." The *Critical Review* for November, 1757, edited by the immortal Dr. Smollet, one of the founders of modern fiction, claiming the right to give an impartial opinion upon the facts submitted by each of the disputants, pronounced judgment in favor of Hunter, a judg-

ment which has been endorsed by the consensus of medical opinion.

Of course, in keeping with the customs of the day a wordy warfare which was waged was coarse and pungent in the extreme. On both sides personalities and invective of the stable yard variety were indulged in. However, it must be borne in mind that in those days a spade was called a spade generally with a strong qualifying adjective. Even Smollet, one of the literary geniuses of all time, was a master of coarse invective so that it can be scarcely a matter for surprise that William Hunter belabored those who tried to filch his discoveries with vulgar abuse. It may be remarked that it was these same Monros who on two other occasions laid claim to priority of discoveries made by the Hunters. Donald Monro, who was a physician at St. George's Hospital, laid claim to priority for his brother on the lame excuse that publication and not demonstration gave one the right to a discovery. However, the general opinion was then and is now that to William Hunter belongs the honor and fame of discovering the object of the absorbent system. This discovery gives him a place among the immortals of medical science.

William Hunter was never married; his fiancée, a daughter of Dr. Douglas, died shortly after they became engaged.

The two brothers William and John Hunter stand out not only among men of medical science of their own time but may be compared with those of any time without suffering from comparison. While John was undoubtedly the greater, William shines as an anatomist and as the discoverer of the absorbent system.

Difference in the Probabilities of Longevity Between Living in the Country and in Great Cities

The accompanying table, photographed from a page of the *London Magazine and Gentlemen's Monthly Intelligencer,* published in March, 1772, shows that relative expectation of life was studied as long ago as that date. A paragraph comments on the table as follows:

"Dr. Price, in his observations on reversionary payments, has published five tables showing the probabilities of life, in the district of Vaud, Switzerland, in a country parish in Brandenburgh, in the parish of Holycross near Shrewsbury, at London, at Vienna, and at Berlin. 'My chief purpose (says he) in giving these tables is to exhibit, in the most striking light, the *difference* between the state and duration of human life, in *great cities* and in the *country*. It is not possible to make a comparison without concern and surprise. I will here beg leave to lay it in one view before the reader, desiring him to take with him this consideration, that (for reasons elsewhere explained) it can be erroneous only by giving the difference much too little.' "

The first division of the accompanying table gives the proportion of inhabitants dying annually in the places mentioned above; the second section shows the "ages to which half the born live"; the third, the proportion of the inhabitants who reach eighty years of age in the various localities studied; the next, the probabilities of living one year in each of the places; and the last, the expectations of life. This at birth is significant enough to quote: in Vaud the expectation of life at birth is estimated at thirty-seven years; in the country parish of Brandenburgh, thirty-two and a half years; at Holycross, thirty-three and a quarter years; in London, eighteen years; in Vienna, sixteen and a half years; and in Berlin, eighteen years. We cannot help but draw the conclusion that London, Vienna and Berlin were not, at least in 1772, the most desirable places to be born in or to live in.

Proportion of Inhabitants dying annually in

Pais de Vaud	Country Parish in Brandenburgh	Holy-croſs, near Shrewſbury	London	Vienna	Berlin
1 in 45	1 in 45	1 in 33	1 in 20¾	1 in 19½	1 in 26½

Ages to which half the born live.

Pais de Vaud	Country Parish in Brandenburgh	Holy-croſs	London	Vienna	Berlin
41	25½	27	2¾	2	2¾

Proportion of the Inhabitants who reach eighty Years of Age.

Pais de Vaud	Country Parish in Brandenburgh	Holy-croſs	London	Vienna	Berlin
1 in 21½	1 in 22½	1 in 11	1 in 40	1 in 41	1 in 37

The Probabilities of living one Year in

Odds	Pais de Vaud	Country Parish in Brandenburgh	Holy croſs	London	Vienna	Berlin
At birth	4⅓ to 1	3½ to 1	4⅐ to 1	2 to 1	1⅕ to 1	1⅜ to 1
Age 12	160 to 1	112 to 1	144 to 1	75 to 1	84 to 1	123 to 1
25	117 to 1	110 to 1	100 to 1	56 to 1	66 to 1	50 to 1
30	111 to 1	107 to 1	96 to 1	45 to 1	56 to 1	44 to 1
40	83 to 1	78 to 1	55 to 1	31 to 1	36 to 1	32 to 1
50	49 to 1	50 to 1	50 to 1	24 to 1	27 to 1	30 to 1
60	23 to 1	25 to 1	26 to 1	18 to 1	19 to 1	18 to 1
70	9½ to 1	11 to 1	16 to 1	12 to 1	11 to 1	12 to 1
80	4 to 1	6 to 1	8 to 1	7 to 1	7 to 1	7 to 1

Expectations of Life.

	Pais de Vaud	Country Parish in Brandenburgh	Holy-croſs	London	Vienna	Berlin
At birth	37 years	32½ years	33⅐ years	18 years	16½ years	18 years
Age 12	44⅕	44	43½	33⅓	35⅔	35½
25	34⅘	35⅓	35	26	28⅓	27⅓
30	31⅖	31½	32	23⅓	25⅔	25⅔
35	27½	28	28½	21⅓	22⅔	22⅔
40	24	25	25½	19⅓	20⅔	20⅔
45	20½	21½	23¼	17⅔	17⅓	18⅓
50	17½	18	20	16	16	16⅓
55	14½	15	17	14⅕	13½	14
60	12	12½	14½	12⅓	11⅔	12⅓
65	9½	9¾	11¾	10⅓	9⅔	10⅓
70	7½	7½	10	8⅔	8⅓	8⅔
75	5½	5¼	8	7	6⅓	7
80	4¼	4¼	5	5	5¼	6

March, 1772.

Oath of the Hindu Physician.—You must be chaste and abstemious, speak the truth, not eat meat . . . care for the good of all living beings: devote yourself to the healing of the sick . . . do the sick no harm; not even in thought seek another's wife or goods; be simply clothed and drink no intoxicant; speak clearly, gently, truly, properly; consider time and place; always seek to grow in knowledge. . . . Do not treat women except their men be present; never take a present from a woman without her husband's consent. When the physi-

cian enters a house accompanied by a man suitable to introduce him, he must pay attention to all the rules of behavior in dress, deportment and attitude. Once with his patient, he must in word and thought attend to nothing but his patient's case and what concerns it. What happens in the house must not be mentioned outside, nor must he speak of possible death to his patient, if such speech is liable to injure him or anyone else. . . . In face of gods and man, you can take upon yourself these vows; may all the gods aid you if you abide thereby; otherwise may all the gods and the sacra, before which we stand, be against you; and the pupil shall consent to this, saying, "So be it."

An Early Description of Malaria in Canada

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It is well known that the curse of what is now the Province of Ontario was in early times malaria, fever and ague—country fever, as it was called from its prevalence throughout the whole country. But long before Ontario or its predecessor Province, Upper Canada, was born—long before Canada was British, indeed—the mosquito had got in his fiendish work and what was afterwards known as malaria was all too well known to our French precursors.

The earliest description of the disease in our country known to me is that given in 1684 by Baron de la Hontan, a Gascon nobleman who, embarking at la Rochelle, came to Canada from France in 1683. His letters from Canada to an old relative in France have been frequently published—an excellent and cheap edition appeared in Paris in 1900—*Un Outre Mer au XVIIe Siècle—Voyages au Canada du Baron de la Hontan, par M. François de Noir.*

He visited Fort Frontenac, now Kingston, Ontario, in the summer of 1684; and in his Letter VII, he gives the following:

M. de la Barre (the Governor of Nouvelle France) joined us toward the end of August . . . he was attacked by a fever which developed rapidly, and his Esculapius had already pronounced sentence of death. The disease also attacked the soldiers whom M. de la Barre had brought with him. . . . This kind of fever, intermittent as it was, had all the power necessary to carry the sick post haste into the next world. In the chill, the convulsive movements, the shivering and the rapidity of the pulse were so violent that the greater part of the sick died in the second or third attack—their blood was brown, verging on black mixed with a kind of yellowish serosity which was not dissimilar to pus.

We asked M. de la Barre's doctor the cause of these symptoms and he, like a clever man sustaining the reputation of his masters and his confrères, dazzled us by his big words. Never did Hippocrates or Galen use finer language concerning the cause of fever. "This disease," he said, rubbing his forehead and with all doctoral authority depicted on his face, "this disease can be attributed only to the bad quality of the air and food . . . the air being too rarefied by the rapid movement which the excessive heat causes in the vapors, one does not take in enough for sound and hearty respiration. Moreover, what little air is taken and pumped in by the pulmonic tubes being charged with contagions and minute impure bodies, throws one's nature into a fatal derangement. Besides, brandy and salt meats turn the blood sour: this sourness . . . causes a coagulation of the chyle and the blood when they mingle in the veins: this coagulation thickens it and prevents it passing in the heart as quickly as usual—that produces an extraordinary fermentation and there you have the fever of Fort Frontenac."

La Hontan, charmed as he was with the doctor's lucid description—coagulation of the chyle producing thickening, thickening preventing passage, etc.—yet permitted himself to doubt—for why, if the oracle was true, were not all the inhabitants of the fort attacked? Why only the soldiers?

He tried a conjecture of his own. The soldiers coming up the river from Montreal, not being skilful enough to pole their canoes along, had to jump out continually into the water to pull them up the Rapids. Now, the water being naturally cold and the heat excessive, the blood might very well be chilled by antiperistalsis and apparently cause revolutions in nature which would produce these fevers—if, at all events, it is true, as the saying runs, *omnis repentina mutatio periculosa est* (every sudden change is dangerous).

He had to give up this theory when, after being chaffed about his old and superannuated "antiperistalsis" (reaction), he was asked to account for de la Barre being attacked when he had never once jumped into the water.

The doctor's theory—or for that matter la Hontan's own—was as good as any till but the other day. For instance, in Hooper's *Medical Dictionary,* Dr. Grant's edition, London, 1848, we find: "It seems to be pretty generally acknowledged that marsh miasmata or the effluvia arising from stagnant water or marshy ground when acted on by heat are by far the most frequent exciting cause of this fever." And I can bear personal testimony that that was the approved theory in Ontario, half a century ago.

La Hontan does not give the treatment: the "antiperiodic" virtues of cinchona, known for the first time to any white in 1638, were probably unknown to de la Barre's "Esculape." However that may be, although he had already pronounced the sentence of death on him, his patient came around in a few days.

I was struck with the malignity of the disease as described: but the pernicious malarial fever described by Sir William Osler: *The Principles and Practice of Medicine,* fifth edition, p. 215, was not rare in old Canada—this seems to be the type seen at Fort Frontenac.

Osgoode Hall.

Editorial Articles

INDUSTRIAL ACCIDENTS TO YOUNG WORKERS

"Youth is a special hazard in industrial employment and as such entitled to special protection by the law. This principle, already expressed in legislation in a number of states forbidding the employment of children under sixteen, and to some extent under eighteen, in the operation of certain dangerous machinery, must be further extended if grave economic, social and individual waste is to be avoided."

In these two statements, the chief conclusions of an analysis of industrial accidents to minors in three states, made by the Children's Bureau of the United States Department of Labor, are summarized. This report presents the results of a study of industrial injuries to employed minors in Wisconsin, Massachusetts and New Jersey, with special reference to the causes of the injuries and to their economic and social effects.

These three states give their young workers a considerable degree of special protection. Yet the records covering a period of twelve months in each state show a total of 7,478 industrial accidents to employed minors, resulting in 38 deaths, 920 cases of partial disablement for life, and 6,520 cases of temporary disablement. These 7,478 cases represent, moreover, only those minors who were entitled to compensation under the law, and concerning whose injuries, therefore, complete records were made. So the total number of injured was much larger than these figures show.

Analysis of the injuries sustained by cause showed that machinery, the most frequent cause of injury, was responsible for more than a third (36.2 per cent.) of the injuries. In Massachusetts and Wisconsin it caused twice as high a percentage of the accidents to minors as of the accidents to workers twenty-one years of age and over, notwithstanding the fact that the employments forbidden to young boys and girls are chiefly the operation of dangerous machines.

Handling objects was the second most frequent cause of injury in all three of the states covered by the study. The most serious results of handling heavy objects are strains, the number of which could be reduced by prohibiting young workers from doing work that involves heavy lifting. There were 122 cases of hernia recorded resulting from strains. Another class of objects handled, namely, sharp or rough objects, was the cause of many injuries. Although many of these injuries were slight in themselves, infection developed in a large proportion of them.

Among all the causes of industrial injuries to minors, falls of persons ranked third in the number of injuries caused. Seven deaths were due to falls, but the percentage of permanent partial disability from this cause was comparatively low.

A noteworthy fact about injuries caused by vehicles, the fourth most important cause, was the large number due to cranking the engines of automobiles. So many of these caused fracture that the duration of the consequent disability was long. The proportion of deaths and permanent partial disability resulting from injuries caused by vehicles was higher than for any other cause except machinery and electrical shock.

The Children's Bureau report concludes as follows:

"Industrial risks for minors as well as for adults can be reduced by requiring more adequately guarded machinery and safer work places, but the findings of this study indicate that for young workers special dangers exist. One is indicated by the high proportion of injuries in which infection developed. If this proportion is to be decreased the natural carelessness of youth must be overcome. Although this would not reduce the number of injuries, it would prevent many of them from disabling the young worker. Another danger is seen in the high proportion of the injuries to minors due to machinery. The analysis which this report presents of accidents to minors in three states shows not only the large number of machine injuries but their severity. It shows also the great need of further protection for boys and girls sixteen and seventeen years of age whose employment—particularly in the operation of dangerous machines—is far less safeguarded than is the employment of younger workers."

GOITRE AND CARDIOVASCULAR DISEASE

Goitre has been much to the front in recent years and the condition has been found to be greatly more prevalent than had been supposed. In the *Boston Medical and Surgical Journal,* September 17, 1925, Dr. Frederick A. Coller, of the Department of Surgery of Michigan University, writes on the subject, attributing to endemic goitre certain diseases and conditions of ill health, including malignant disease. He states that goitre is a precancerous lesion with an incidence of malignancy of, at least, three per cent.

However, the condition to which it is proposed to direct attention in this editorial is the damage done to the cardiovascular system by endemic goitre in

the production of heart disease and the suggestion that as much notice should be paid to goitre as a factor in the bringing about of heart disease as to syphilis and rheumatism. This reads as a reasonable argument and perhaps it may be carried somewhat further. It seems to lend weight to the hypothesis that endemic goitre and rheumatic disorders are allied.

A great deal has been written of late concerning the evil effects of high blood pressure and hyperthyroidism, but the subject of low blood pressure and subthyroidism has been comparatively neglected, although interest is now being aroused in this phase of the question. The terms low blood pressure and subthyroidism if not identical are frequently coincidental, while subthyroidism is coming more and more into the limelight as predisposing to certain diseases, notably to goitre and some forms of rheumatism. As is well known, there are forms of goitre not associated with hyperthyroidism. These are parenchymatous goitre, in which there is a general increase in normal thyroid tissue; colloid goitre, in which the quantity of colloid is excessive; cystic goitre, due to degeneration of the walls in colloid goitre, and fibrous goitre resulting from inflammatory changes. Also it has been mooted recently that a subthyroidic taint in parents subjects their offspring to a special tendency to rheumatism and perhaps rheumatic fever, as well as to the rheumatoid or atrophic and osteoarthritic or hypertrophic types of arthritis deformans. Of course, rheumatism and especially in children is a potent, some say the most fruitful, cause of heart disease, and therefore it would seem that in fighting subthyroidism or thyroid instability we are fighting to prevent heart disease, on sound and plausible premises.

Thus there appears to be a basis for the hypothesis that there is a relationship between endemic goitre and rheumatism. Again, deficiency of the mineral salts, constituents of our bodies be it remembered, causes diseases of various kinds, delay of growth deformities and wasting diseases of youth and of adult age. For example, iodine, which recent investigations have shown to be one of the most important of these salts and its lack in the thyroid the cause of that condition known as hypothyroidism, is believed to be responsible for or a leading factor in the causation of many of the most common and severe maladies. It has been practically proved that endemic goitre is due to deficiency of iodine in the thyroid gland.

It is suggestive in this connection to note that Michigan, of which Dr. Coller is a resident, is a part of the iodine starved belt of this country, and that the use of iodine in small doses has been encouraged there since the beginning of the year. The prevalence of hypothyroidal conditions is wider by far than is generally supposed, not only in country districts lacking in iodine, but in cities and towns in which sophisticated food denuded largely of its mineral salts including iodine is the diet, as a rule, of the mass of the people, hypothyroidal or goitrous conditions, or conditions bordering on goitrous, are more or less frequent.

Several peculiarities of rheumatism seem to suggest a link with goitre and more certainly with hypothyroidism. Dr. Coller has done well to point out that endemic goitre appears to synchronize with heart disease, or rather that endemic goitre damages the cardiovascular system. As heart disease is now the most prevalent and deadly disease, it is fitting that every probable or possible means should be sought to prevent it. The field of hypothyroidism appears fruitful in this direction.

LUES AND LUETISM

Syphilis is undoubtedly the origin of much disease and ill health. Figures as to the incidence of syphilis are extremely conflicting, some medical statisticians placing them very high, others putting them quite low. As a matter of fact there are no reliable data on the subject and it is a matter regarding which information is called for.

In the effort to clear up some of the moot points with respect to syphilis, Dr. Eugene Hertoghe of Antwerp and Dr. William Seaman Bainbridge of New York wrote an article on the subject which was published in the *Franco-British Medical Review,* January, 1925, referred to in this journal, and which they followed up by another article in the *Franco-British Medical Review.*

The authors developed the thesis that in addition to the accepted types of specific disease, congenital and acquired, there is a much attenuated form of syphilis which may have been modified by passing through a number of generations, which may react to none of our present day tests for specific disease, but which is present as an important element in numerous cases. This type of thinned out lues the authors have termed luetism, a taint not passed by contact, nonreactive to present day tests, but a factor in many and widespread morbid reactions and almost nonselective in its points of attack.

The authors particularly insist upon the point that to no one cause can all disease be attributed suggesting that disturbed endocrine activity, metabolic dysfunction, chronic intestinal stasis, with toxic conditions, focal infection and luetism are more or less interrelated.

They believe that there is cumulative evidence to show that, 1, there is an attenuated form of syphilis, possibly so modified by passing through several gen-

erations as to prove nonreactive to the Wassermann test. 2. This type of syphilis is an important underlying factor in numerous doubtful cases, particularly in some of the ulcerative cases of the gastrointestinal tract, and occasionally in other conditions which exhibit elements of a somatic toxic state. 3. Since the Wassermann test is variable in cases with gross syphilitic lesions, it is logical to assume that it will show far greater modifications in its reactions to an attenuated form of syphilis, the thinned out type which the authors term luetism. 4. The favorable results obtained from iodine medication in goitre, and from bismuth medication in gastrointestinal conditions, point to an antiluetic effect of these drugs on a possible underlying factor of luetism. 5. Intensive research might be instituted to discover a test to take the place of the Wassermann. This new test should be so sensitive that it will react to the possible variable types of the spirocheta in the hypothetical gap between our present day negative and this greatly modified type of syphilis. This hypothetical gap is described in the text of the article.

The arguments are suggestive and plausible. Syphilis may be the underlying cause or a factor in many diseases and the argument, applied to certain gastrointestinal disorders which clear up under intensive bismuth medication, because, as the authors point out, bismuth is an antiluetic medicament, sounds reasonable. The question of luetism is one which it seems might be studied with advantage.

X RAYS IN THE DIAGNOSIS OF DISEASES OF THE LUNGS AND PLEURA

Of course, that x rays are an invaluable aid to diagnosis cannot be rightly disputed. On the other hand, it is unwise to belittle well tried clinical methods of diagnosis and to applaud x rays as the only means of detecting with accuracy certain pathological conditions. It seems to be the fashion to regard the older methods of diagnosis as out of date and to look upon the modern modes as all sufficient for the purpose. In a paper contributed to *The Practitioner,* February, 1926, by Dr. David Lawson, a note of warning is uttered on the fallacy of placing too great faith in x rays for diagnosing diseases of the lungs and pleura, for instance. This authority insists that this method can never effectively displace clinical methods and that its rightful position in the armamentarium of the physician is that of complement to the older methods.

The writer states that skiagraphy alone, although it provides us with a permanent record, and may reveal changes invisible by the screen, is singularly incomplete; as there are certain important phenomena of value to the physician which it cannot disclose, and which nevertheless may be detected easily by fluorescent screen examination. It must be always borne in mind that the lung is a tidal organ, of which the physical condition changes with the movement of respiration and further the neighboring organ, the heart, is a mobile organ. Its activity is ceaseless. These fundamental facts are of the nature of a closed book to the photographer. He cannot make use of them but the screen can. The transillumination of the lung, which increases during inspiration and decreases during expiration is clearly discernible on the screen. Many other important points in the diagnosis of lesions or abnormalities of the lung and pleura can be distinguished by screen examination.

The point upon which Dr. Lawson wishes to insist is that too much is often asserted for differential diagnosis by means of radiography alone, and that to get the maximum help the physician and the skiagrapher should always, where possible, collaborate and examine the patient together by means of the fluorescent screen in the dark room.

THE TONSILS

The why and wherefore of the tonsils is still very much of a mystery. They have been of especial interest to school medical inspectors because of the importance to the health of the child, of their condition, and it has had much study at the hands of such inspectors in England where the men are better equipped for research than our own school medical officers, who usually are poorly paid part time men, with little inclination to studies of this nature.

Dr. H. Leslie Cronk, in his little book on *School Medicine,* has given a most interesting summary of what has been advanced, with any show of foundation, in regard to the function of the tonsil. He believes there is an intimate relation between the thyroid and the lymphatic tissue, including the tonsils, and that inadequacy of thyroid secretion is connected with overproduction of lymphatic tissue and enlargement of the tonsils. "There is experimental proof that administration of thyroid extract may diminish the size of adenoids and enlarged tonsils."

In his school studies he found that there was a rise in incidence of enlarged tonsils in close correspondence with periods of acceleration in growth and he puts forward the hypothesis that "in the past stages of evolution puberty took place earlier than it does now, the postponement occurring *per saltum,* and that it has advanced in boys one stage more than in girls. Before puberty is attained there is a great increase of weight of the body, and this increase remains marking the almost obliterated previous pubertal periods. To bring about this great increase in body weight the lymphatic tissue is produced in excess for a year or two previously and the catabolic func-

tion of the thyroid diminished; as the latter increases the former diminishes and increase in growth occurs. There is thus a period of anabolism with activity of lymphatic tissue favoring nutrition and diminished growth; the thyroid then wakes into activity, leading to the decrease of the lymphatic tissue, increased metabolism, and rapid growth in both height and weight.

"There are one or two interesting facts as regards enlarged tonsils which fit into this scheme quite well. It is well known that enlargement of the tonsils runs in families; numerous cases have come under my own observation, but I think the fact is too well known to need more than mention. Of course, this may only mean similar external circumstances have been acting, but when it is taken into account that families with enlarged tonsils live next door to those without it is more plausible to suggest some hereditary condition or some dietetic distinction. That there is such hereditary transmission of thyroid inadequacy is probable. Secondly, enlargement of the tonsils has been found to occur more frequently among children with little fingers incurved in the manner seen among Mongolian imbeciles.

"Thirdly, the relatives of children with goitre fairly frequently have incurved little fingers and still more frequently have enlarged tonsils. All these facts closely connect hypertrophy of the tonsils with thyroid inadequacy.

"The bases for the ordinary view of tonsillar enlargement are obvious, and some of the arguments require consideration. First, most enlarged tonsils are infected. This is shown in many ways and most clearly, perhaps, by their association with enlarged cervical glands. Statistics have been collected and published showing this relationship which, since it is an uncontested experience, need not be quoted. It is sufficient to remember that the size of the tonsil does not determine the size of the cervical glands, and that numerous cases of quite wellmarked hypertrophy of the tonsils are met with in children whose cervical glands could hardly be called abnormal. On these grounds, among others, it must be concluded that few enlarged tonsils escape infection, but this does not necessarily mean that the infection is the cause of the hypertrophy. The source of the infection has been variously stated; the most frequently cited are carious teeth, colds, and the exanthemata."

With regard to the treatment of tonsils he says: "About the only reasons for removing tonsils will be the presence of chronic cervical adenitis, recurrent tonsillitis or quinsy, and, occasionally, the presence of a remote disease of a chronic nature, which may be kept going by septic tonsils, and where no other focus can be ascertained. If these principles are adhered to the results of the operation will be, almost invariably, good. The prevention of tonsillar infection will include removal of any causes local, such as carious teeth, chronic nasal catarrh, etc., or general, such as the exanthemata, and early cure of hypertrophy by medical means if possible. I think that an effort should be made on a sufficiently extensive scale to treat enlarged tonsils in young children with iodine or thyroid extract and compare the result with those not treated, having special regard to respiratory affections and infections of the tonsils."

THE INCREASE OF APPENDICITIS

It is but a few years ago that appendicitis became known as a disease. The first operation for appendicitis was done in Boston some thirty years ago. Formerly the disease was generally fatal because it developed into peritonitis. Appendicitis is becoming more common and it is asserted by some that it is one of the diseases due to the diet of civilization.

In the *New Health Society Bulletin* for March it is pointed out that the condition is practically unknown among primitive races and that English surgeons practising among the hillmen in Northern India and among the negroes in Central Africa report often that they have to do a considerable number of appendicitis operations among Europeans but not among the natives. It is argued that if it is a germ disease it should obviously spread from the Europeans suffering from appendicitis and living in Central Africa, Northern India and so on to the natives in their vicinity. It is suggested that the undoubted increase of appendicitis in civilized and among white men in uncivilized countries is owing largely to the denaturalized and unsuitable foodstuffs which form a goodly proportion of the white man's diet. For example, Europeans living in India, Central Africa and in other primitive regions into which they have intruded bring with them the food of civilization and live largely on chemically bleached, highly refined white flour from which the husk containing the vitamine content has been carefully removed, on canned meat, canned vegetables, canned milk and other similar foods.

While the exact cause of appendicitis is unknown it is known that it is most frequent in towns, rare in the country and extremely rare in primitive districts in which the natives live on a natural simple diet. These facts lead to the suspicion that socalled civilized diet is a ruling factor in the causation of appendicitis. There is little doubt that in the towns of this country denatured food is eaten to a large extent and it does seem likely that this kind of food may be largely responsible for the many cases of this painful and not infrequently fatal malady.

News Items.

New X Ray Equipment.—Long Island College Hospital has recently had installed a complete high voltage x ray equipment with lead wall protection.

Professor Osborn Honored.—Prof. Henry Fairfield Osborn, for many years president of the American Museum of Natural History, New York City, has been made a Fellow of the Royal Society of England.

Mental Hygiene Clinic Reorganized.—The mental hygiene clinic of Hudson Guild, New York City, has recently been reorganized. Its director is Dr. Stephen P. Jewett, of the Bureau of Children's Guidance.

Baron Rothschild Here.—Baron Henri de Rothschild, of Paris, well known not only as a pediatrist, but also as a playwright and a philanthropist, is in the United States and will spend several weeks in studying the aspects in this country of his special activities and interests.

Dr. Cogswell's Diary.—The Yale University Library has recently received an interesting and valuable gift in the original manuscript of the diary of Dr. Mason Fitch Cogswell, Yale, 1820, of New Haven.

To Study Out Patient Clinical Methods.—Michael M. Davis, Jr., Ph.D., executive secretary of the United Hospital Fund of New York, has sailed from New York to spend several months studying out patient clinical methods in the hospitals of Europe.

Health Survey of Constantinople.—Dr. Ralph K. Collins, of Trinidad, Colo., has been sent by the Rockefeller Foundation to make a health survey of Constantinople and to escort back to this country a group of native Turkish physicians and nurses to study local health methods.

Gift to Baker Laboratory at Cornell.—Announcement was recently made of a gift of $30,000 from George F. Baker, financier of New York, to be used in the Baker Laboratory of Chemistry at Cornell University. The laboratory, costing $1,500,000, was the gift of Mr. Baker a few years ago.

Mental Hygiene at Brown University.—Announcement has been made by the president of Brown University, Dr. W. H. P. Faunce, that for next year two trained psychiatrists have been engaged to devote their services to the study, care and treatment of the mental life of the undergraduates at the university.

Portrait of Dr. Francis.—The Presbyterian Hospital in New York City has recently been the recipient of a valuable portrait of Dr. John Wakefield Francis, painted by John Trumbull. The picture was given to the hospital by Mr. and Mrs. John Jay Chapman to be hung in its new home in the new Medical Centre.

Streets Named After Eminent Physicians.—Dr. John J. Nutt, of New York, has written a letter to *New York Medical Week* making a suggestion that the streets and squares in the neighborhood of the city's new Medical Centre be named after some of America's eminent physicians. He quotes the French precedent for this procedure.

Sturgis Research Fund Increase.—The Sturgis Research Fund of the Burke Foundation, for applications in the convalescent field, has recently had its endowment enlarged through a gift from its founder and by proceeds from sales of the products of occupation work by the patients. The fund, with the aid of the American Heart Association, is making a second study of the results of neuromental convalescence.

Memorial to Walter Reed.—The little town of Belroi in Gloucester County, Va., the real birth place of Walter Reed, in cooperation with the Walter Reed Memorial Commission of the Virginia Medical Society, will take steps to have the little house in which Reed was born, now in a dilapidated condition, restored and made a national shrine. The fact that Harrisonburg, Va., is usually given as the great physician's birthplace is probably accounted for by the fact that his family went there from Belroi to take up their residence when he was a mere infant.

Trachoma Among the Indians.—A delegation of ophthalmologists recently left New York City to inspect the Indian reservations in Oklahoma with a view to instituting measures for the cure of the widespread trachoma prevalent among them. The delegation included Dr. Benjamin Franklin Royer, medical director of the National Committee for the Prevention of Blindness, Dr. Arthur M. Yudkin of the Yale University School of Medicine, Dr. William H. Wilder of Chicago, and Dr. Thomas B. Holloway of the School of Medicine of the University of Pennsylvania.

Harvard's African Expedition.—Dr. Richard P. Strong, professor of tropical medicine at Harvard, and seven associates sailed recently from Boston to make a study of African life and to observe the effects of special drugs on sleeping sickness and other diseases prevalent there of men, animals and plants. Others of the faculty of Harvard accompanying Dr. Strong are Dr. George C. Shattuck, assistant professor of tropical medicine; Dr. Joseph Bequaert, assistant professor of entomology; Dr. Glover M. Allen, lecturer on zoology; and Dr. Max Theiler, instructor in tropical medicine.

Gifts and Bequests.—The Union Memorial Hospital, Baltimore, received $25,000 by the will of Mr. John S. Gittings, of Baltimore.

The will of the late Gustav Ulbricht provides $2,000 for the Pasavant Memorial Homes; $50,000 for the New York Association for Improving the Condition of the Poor, and $25,000 to the Cornell University.

The Sharon Sanatorium, Sharon, Massachusetts, and the Central New England Sanatorium and Tumor Colony, Rutland, Massachusetts, received $150,000 by the will of the late Mrs. Thomas O. Richardson.

One thousand dollars was bequeathed to St. Joseph's Home for the Blind, Jersey City, by the late Nellie Lynn, of Phila-

Personal.—Dr. Seymour Oppenheimer, of New York, has temporarily discontinued his practice of medicine and will spend some time abroad investigating plastic and cosmetic surgery of the head, face and neck. Upon his return he will devote himself exclusively to this branch of medicine. Pending his absence Dr. Harold Hays and Dr. Arthur Palmer at 22 West Seventy-fourth Street, will assume charge of his practice.

Dr. René Sand, secretary general of the League of Red Cross Societies, arrived recently for a visit in New York and other cities of the United States.

Miss Katharine G. Ecob, for several years chief field agent of the New York State Commission for Mental Defectives, has recently been made a member of the staff of the State Committee on Mental Hygiene of the New York State Charities Aid Association.

Dr. Walter Timme, of New York, delivered the Emmerling Memorial lecture before the Pittsburgh Academy of Medicine.

Dr. Leon Dufourmentel of Paris has been a recent visitor in New York City.

Dr. M. O. Magid has been appointed visiting surgeon to the penitentiary workhouse for women on Welfare Island, New York City.

Dr. Ross Miller and Dr. J. B. Acker, both of Nova Scotia, have been visiting friends in New York.

Dr. George E. Brewer was guest of honor at a meeting and dinner of the West Side Clinical Society of New York, on May 11th, and made an address on the subject of military surgery.

Dr. Arthur V. Meehan of Brisbane, Australia, has been making a brief visit in New York.

Dr. George J. Doyle has been appointed chief medical examiner for the New York Municipal Civil Service Commission.

Among recent visitors from abroad at the Bureau of Clinical Information of the New York Academy of Medicine, were Dr. Peter Schmidt of Shanghai, China; Dr. Clara Stewart of the Medical School of Leeds, England; Dr. Jamichi Satow of Tokio, Japan; Dr. C. H. Hendry of Soochow, China; Dr. H. H. Waterhouse of Koloa Kanai, Hawaii; and Dr. Miguel C. Algovin of Lima, Peru.

Dr. James J. Waygood, psychiatrist, has been appointed director of the recently established neuropsychiatric clinic for children at St. Christopher's Hospital for Children in Philadelphia.

New appointments to the faculty of the New York Polyclinic Medical School and Hospital include Dr. Jerome M. Lynch, Dr. Austin Cossitt, Dr. Adrian V. S. Lambert, Dr. Robert E. Brennan, and Dr. Edward L. Kellogg.

Dr. Eleanor Van Alstyne has been elected president for the coming year of the Women's Medical Association of New York City.

Dr. Adolph Elwyn, assistant professor of anatomy at the New York College of Physicians and Surgeons, addressed the spring meeting on May 27th of the Association of the Alumni of the College on the subject of the Dawn of Modern Medicine.

Society News and Notes.

At the recent annual meeting of the Pennsylvania Public Health Association, the following officers were elected: president, Dr. William Krusen of Philadelphia; first vice-president, Dr. Carey J. Vaux, of Pittsburgh; second vice-president, Dr. Howard C. Frontz, of Huntingdon; secretary-treasurer, Dr. William C. Miller, of Harrisburg; assistant secretary-treasurer, Dr. Edgar S. Everhart, of Harrisburg. The members of the executive committee consist of the above mentioned officers, together with Dr. Charles H. Miner, Miss Alice O'Halloran of Harrisburg. Dr. W. C. Davison of Kingston, Dr. J. Treichler Butz of Allentown, Dr. Frank J. Small of York, and C. B. Auel of Pittsburgh. The next annual meeting will be held at Pittsburgh, and Dr. Vaux, director of the Health Department of that city, has been appointed chairman of the program committee.

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The German Social and Scientific Society of New York City celebrated Prof. Sigmund Freud's seventieth birthday on May 6th at the Hotel Majestic. In a review of the great analyst's life and work, Dr. C. P. Oberndorf stated that his recognition came first from America.

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The first annual meeting of the Saskatchewan Health Officials' Association, organized on March 5th, will be held at Saskatoon in July at the same time as the meeting of the Saskatchewan Medical Association. The object of the Health Officials' Association is the promotion of public health agencies and activities, and all salaried public health officials are eligible to membership.

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The Pan-American Red Cross Conference, which began in Washington on May 25th, is in session and will continue until June 5th. Popular health education is the chief topic of the convention.

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Expositions of interest in European cities under the auspices of various local and foreign medical and welfare societies are the Exposition for the Care of Health, Social Care and Physical Exercise now being held in Dusseldorf, Germany; the International Health Exhibition, called very appropriately "Man," in Budapest, Hungary, now open and to run until September; and the International Child Welfare Exposition to open in Antwerp, Belgium, in October. At the Philadelphia Sesquicentennial International Exposition there will be numerous exhibits by public and private health agencies.

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The Travel Study Club of American Physicians will sail from New York City on June 12th. Among foreign physicians who will assist in receiving and entertaining the American delegation will be Prof. Siegert of the University at Cologne, Prof. Vulpius of the medical faculty of Heidelberg University, Dr. De Quervain, dean of the faculty of the University of Berne, and Dr. Rollier of Leysin. Among those who will go from New York and vicinity are Dr. Frederic H. Albee, Dr. Louis L. Seaman, Dr. Richard Kovacs, and Dr. Lulu Hunt Peters.

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A group of fathers, whose wives and children attend the Infant Welfare Centre, Kensington, have been organized since 1921 as a Fathers' Council, according to *Maternity and Child Welfare*. This council works in cooperation with the general committee of the center, aids in eradicating unsanitary conditions and housing violations in the district, and assists in the formation of such councils in other parts of London.

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The French Benevolent Society recently announced its purchase of a large plot in West Thirtieth Street, New York, between Eighth and Ninth Avenues, as a site for a new fifteen story building to replace the present French Hospital at 450 West Thirty-fourth Street. The new hospital will have a capacity of 175 beds.

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The American Society for the Prevention of Cruelty to Animals has distributed an appeal urging citizens of New York to write to their State Senators and Assemblymen urging them to support the bills before the Legislature designed to lessen greatly the suffering of animals trapped for their furs. These bills provide for the inspection of traps every twenty-four hours, the stamping of each trap with the owner's name, and the elimination of nonkilling steel traps after January 1, 1928. Under the terms of the bills traps used after this date must capture the animal alive and unhurt or cause its immediate death.

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The committee for America of the International Stomatological Association, which is now making the preparations for the participation in the International Stomatological Congress to take place in Paris in 1927, consists of the following: Chairman, Alfred J. Asgis, D.D.S.; treasurer, G. Reese Satterlee, M.D.; recorder, E. B. Hardisty, A.B., scientific research, E. C. Rosenow, M.D.; clinical stomatology, Joseph Colt Bloodgood, M.D.; education and legislation, Oliver T. Osborne, M.D.; public health and lay education, William G. Schemeley, M.D.; history of stomatology, George W. Mackenzie, M.D.; bibliography and nomenclature, Anthony Bassler, M.D.

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The New York Electrotherapeutic Society has communicated the following resolutions to the New York City Department of Health:

WHEREAS, Various commercial concerns and enterprises dealing in electrotherapeutic and allied apparatus are with increasing frequency holding public lectures in New York which are in effect and in fact nothing more than lectures advertising their goods; and Whereas, audiences to these lectures are not limited to members of the medical profession; and

WHEREAS, The lectures themselves are not carefully selected or given, and Whereas, the audience must necessarily be misled,

Be It Therefore Resolved by the Executive Committee of the New York Electrotherapeutic Society that the Department of Health should control such lectures by licenses, after due and proper investigation, so that the public may be protected from the aforesaid abuses.

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The American Public Health Association Program Committee has announced as follows the tentative program for the annual meeting in Buffalo in October: Photographs and Other Art in Education and Publicity—a clinic session on the uses and abuses of the several forms of illustration; Posters and Placards—a clinic for the purpose of suggesting the most usable of the poster material supplied by various health agencies and outside publishers; Materials for Child Health Education (joint session with Child Hygiene)—a clinic aimed to arrive at a tentative agreement on a limited selection of materials for class room use; Business and Dinner Meeting—on Monday, the opening night, to which only fellows and members and their guests will be invited; Round Table Sessions—luncheon and dinner gatherings limited to about twenty persons to make it easy for all present to participate; Editors of Health Periodicals—a session for discussion of problems in editing and publishing magazines; Exhibits and Headquarters—a collection of helpful publicity and educational material and opportunity for discussion of individual problems; The Section Council will value suggestions as to topics for round table sessions. Among those being considered are Radio, Newspaper Releases, Getting Volunteers to Do Your Work, Uses of Statistics, Exhibits, House Organs and Film Slides. Such suggestions should be sent to Raymond S. Patterson, State Department of Health, Trenton, N. J. An international tone will be given to the meeting by discussions of tropical hygiene by leaders from Mexico, Central America, and South America, and the presentation of a résumé, supplemented by an exhibit of public health work being done in Russia, by a prominent Russian sanitarian.

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The Society of Neurology of Paris held its Seventh Annual International Reunion, June 1st-2nd, in Paris at the Salpétière. The leading question of the conference was the actual means of exploration of the sympathetic system in clinics and their value. The chief speakers were Dr. André Thomas of Paris, and Dr. Soderbergh of Göteborg.

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At the recent annual election of officers of the Section on Dermatology and Syphilology of the New York Academy of Medicine, Dr. Mihran B. Parounagian was appointed chairman and Dr. George C. Andrews, secretary.

Book Reviews

DIETETIC TREATMENT OF DIABETES

Verordnungsbuch und Diätetischer Leitfaden für Zuckerkranke. Von Professor Dr. Carl von Noorden und Professor Dr. S. Isaac, in Frankfurt am Main. Mit 172 Kochvorschriften. Zum Gebrauch für Arzte und Patienten. Dritte und vierte verbesserte und vermehrte Auflage. Berlin: Verlag von Julius Springer, 1926. Pp. 135.

The frequent revisions within a comparatively short space of time is plain proof of the popularity and appreciation of this very practical little handbook on the dietetic treatment of diabetes for both physician and patient. This edition is enriched by the addition of some points of practical importance and the usual dietary régime followed by the authors in conjunction with insulin therapy.

The food of the diabetic is divided into two groups: 1, the main diet, consisting of foods free from and poor in carbohydrate, and 2, the additional diet, consisting of foods containing carbohydrate. The foods rich in fat are grouped separately. Special attention is called to the table which shows, in addition to the albumin, fat, and carbohydrate contents of various foods and their caloric values, the socalled white bread units and white bread values of carbohydrate foods. Pieces of white bread weighing twenty gm. are taken as the standard (unit). This is based on the principle that the diabetic diet usually includes a certain amount of white bread, and in order that the patient may have some choice and variation in his diet, he may substitute for the white bread carbohydrate foods of the same value. For example, 180 gm. of potatoes have the same white bread value as sixty gm. of white bread. This choice is made easy by the table of the carbohydrate equivalents. This is a new feature of this edition.

Suitable menus are described and the various types of diets are given. A special chapter is devoted to the diet used with insulin treatment. The last part of the booklet is devoted to instructions for the preparation of foods.

SYPHILIS

Le Traitement de la Syphilis par le Bismuth. By Dr. Georges Drouet. Third Edition, Entirely Revised. Paris: A. Maloine et Fils, 1926.

In this monograph Drouet considers in detail the subject of the treatment of syphilis by bismuth. Having been one of the pioneers in this work, his opinions and conclusions may be considered authoritative. The French reading syphilographer will find a vast fund of information in this little volume, not only of a theoretical character, but also of the most practical kind. The author has aimed particularly to make this a practical work, and the reader will find little to find fault with on this score. The work is eminently practical in scope.

In discussing the technic of bismuth therapy the author stresses the dangers inherent in the intravenous administration of bismuth. He states, however, that colloidal bismuth and the soluble tartrobismuthates are being used intravenously. The intramuscular injection is his method of choice. The author emphasizes the interesting fact that patients who are intolerant to repeated injections of a certain bismuth salt will readily tolerate a different bismuth preparation. This is particularly important in cases which have shown an intolerance to the arsenicals. The mere change from one preparation to another seems to be of great value in these cases.

Syphilologists employing bismuth in their practice will find it extremely profitable to read this little work. It will well repay the time devoted to it.

SANITATION AND HYGIENE

A Manual of Hygiene and Sanitation. By Seneca Egbert, A.M., M.D., Dr. P.H., Professor of Hygiene, University of Pennsylvania. Eighth Edition, Enlarged and Thoroughly Revised. Illustrated with 154 Engravings and four Plates. Philadelphia and New York: Lea & Febiger, 1926. Pp. viii-616.

The eighth edition of this most popular book on the subject of hygiene and sanitation has been published to keep in step with the most recent advances in this field. The necessary revisions have been made and two entirely new chapters have been added. One is the chapter on transmission of diseases, which indicates the different ways in which the various infections spread from one individual to another and their importance. The other new chapter deals with tourist and vacation hygiene and camp sanitation and contains much valuable advice to those who indulge in outdoor life. The chapter on military hygiene has been omitted. Other new features in this edition include discussions on prenatal hygiene, habit and social hygiene, heliotherapy, and the means of prolonging life by hygienic measures.

The author has given us a book of superior quality, concise, practical, interesting to read, up to date, and to the point.

DISEASES OF THE MOUTH AND THROAT

Verletzungen und chirurgische Krankheiten der Mund- und Rachenhöhle, des Halses einschl. der Speichedrüsen, der Speiseröhre, des Kehlkopfes und der Trachea. Von Professor Dr. Paul Clairmont, Vorstand der Chirurgischen Klinik in Zürich. Mit 97 Textabbildungen. Diagnostische und therapeutische Irrtümer und deren Verhutung, Herausgegeben von Prof. Dr. Schwalbe, Geh. San.-Rat in Berlin. Siebentes Heit. Leipzig: Verlag von Georg Thieme, 1926. Pp. 188.

This treatise on the injuries and surgical diseases of the mouth and pharynx and the throat, including also those of the salivary glands, esophagus, larynx and trachea, is based on the vast experience of Paul Clairmont and a review of the most recent literature. The style of the author is attractive and he has succeeded in giving a clear presentation of the subject. The illustrations are numerous and beautiful, being photographs of the author's cases and some selected from various other authors. Every surgeon will find much valuable material in these pages, and even the general practitioner will be benefited by the very simple diagnostic methods suggested. These are especially instructive as there is usually much room for diagnostic and therapeutic errors in the diseases of the mouth and throat. Carcinoma of the various organs is given particular attention. The chapter on goitre is especially commendable.

PUBLIC HEALTH ENGINEERING

The Principles of Public Health Engineering. By Earle B. Phelps, B.S., Professor of Sanitary Science, College of Physicians and Surgeons, Columbia University; Formerly Associate Professor of Chemical Biology, Massachusetts Institute of Technology. New York: The Macmillan Company, 1925. Pp. viii-265.

In this book the author provides in somewhat condensed form a course in Public Health Engineering first offered at the Columbia University Summer School in 1924. It is intended for two classes of advanced students: for the medical health officer who has had little or no engineering training and for the sanitary engineer well versed in engineering, but with insufficient knowledge of the principles of public health. The author has attempted to treat of principles rather than of practice. After twenty-five years of experience along these lines he is well fitted to present the subject matter in suitable form.

The introductory chapter is concerned with environmental conditions and their effect upon public health. The other subjects discussed include atmospheric pollution, the ventilation of buildings, the municipal water supply and the methods of rendering it pure and potable, sewerage and the methods of handling it, the pasteurization of milk, and the lighting problem. The chapter on miscellaneous environmental control includes such subjects as the collection and disposal of municipal refuse, mosquito control, and fly control. Each chapter has a bibliography of references and collateral reading, which are very helpful and make this book valuable for home study.

The author has accomplished a creditable piece of work and the book may well be recommended to those interested in the subject.

CYSTOSCOPY

Operative Cystoscopy. By E. Canny Ryall, F.R.C.S., Founder of and Senior Surgeon to All Saints' Hospital for Genitourinary Diseases, London. With 115 Plates Containing 670 Original Illustrations of Which 528 Are Coloured. St. Louis: C. V. Mosby Company, 1925.

This unusual volume fulfills a long felt want in the realm of American urology. Textbooks galore have been written, all dealing with the subject of urology in the usual manner, but they have failed to deal with operative cystoscopy as a major factor in urology. In the volume under review, the author has confined himself to the operative aspect of cystoscopy, revealing in full measure the many possibilities inherent in the skilful use of this instrument.

Operative measures applied to the ureters, bladder and prostate are fully considered. A brief explanatory text occupies the front part of the book. This part of the work will be found almost as useful as the illustrated plates themselves. Complementing each other, the text and plates form a most valuable combination, giving the reader a complete picture of the clinical conditions.

The plates are unusually beautiful and truly represent the intravesical picture as seen by the artist, Thornton Sheills, through the cystoscope. There is not the least tendency to exaggeration of line and color so often encountered in works of this kind.

The work being really international in scope and character, the legends facing the plates appropriately are given in three languages, English, French and German. The operative methods advised are conservative yet modern in the highest degree. To the urologist and, even more so, to the general practitioner and surgeon, who desires to utilize his cystoscope to its utmost, this handsome volume can be heartily recommended, as perhaps the best of its kind. It is not too much to say that a careful study of this work is as good as most postgraduate courses and better than some.

DIGESTIVE PROCESSES

Methoden zum Studium der Funktionen des Margendarmkanals. Von F. Uhlmann. Handbuch der biologischen Arbeitsmethoden, Teil 6, Heft 2. Berlin und Wien: Urban und Schwarzenberg, 1925.

This monograph by Uhlmann contains a detailed description of all the methods used in the biological studies of the digestive processes. Animal experiments as well as methods used in determining the different functions in patients are thoroughly discussed. Cannon's röntgenographic studies on intestinal mobility, the duodenal tube, also the intestinal tube, are fully described. For physicians interested in the physiology of digestion the present volume is highly valuable.

KIDNEY DISEASE

Kidney Disease from the Physician's Viewpoint. By Rolfe Floyd, M.D., Junior Attending Physician and Pathologist to Roosevelt Hospital, New York. New York: James T. Dougherty, 1926. Pp. vi-181.

In this monograph a clinician endeavors to present whatever is necessary for the understanding of kidney disease by clinicians. No new material is offered, but whatever is known is presented in a masterful and critical manner. It treats of most of the bilateral renal conditions but does not take up the socalled surgical kidney.

In spite of a vast amount of study devoted to the diseases of the kidney ever since the epoch making work of Bright, there is still some confusion in the classification of these diseases when it comes to true and essential distinctions that would bear the tests of analysis and time, and the further attempt to get a good clinical classification that would correspond completely with a good pathological classification has failed up to the present time. The stumbling block seems to be our ignorance of how the kidney elements (the glomerulus and the tubular elements) perform the kidney functions. The goal is a proper correlation between our knowledge of renal lesions and a better understanding of renal symptoms and functions.

The plan of presentation is as follows: The two classifications of kidney disease, Delafield's and Volhard and Fahr's, which the author believes to be the best, are taken up and they are compared critically as to their agreements and differences. Normal kidney function and the failures of kidney function in disease, including nitrogen and salt retention, and the symptoms resulting from these retentions, as well as the symptoms which have been mistakenly thought to be uremic, are described next. The problem of dropsy is then discussed. Hypertension is next defined, its results described and some of its causes are discussed. The nephrosis of Volhard and Fahr, so widely discussed today, is critically analyzed, and the more recent views of Epstein, who injects the element of a possible derangement of the protein threshold as a factor, are presented. The author then at-

tempts to tell what the modern term nephritis means and how this lesion may be recognized during life. The significance of renal function tests is discussed. The purpose, basis and difficulty of renal classification and a review of groups of renal disease are presented and the author comes to the conclusion that there is nothing new to be said on the subject, and that we must return to the bedside, the laboratory and the necropsy and secure more information before the diseases of the kidney can be better understood. In the meantime we must be more particular in regard to the use of the terms we employ. Consequently the treatment must be symptomatic at present and a very brief outline of the methods used is given. A bibliography, upon which the author bases his work, is appended.

This monograph will admirably serve the purpose of acquainting the clinician and general practitioner with all that he should know of the fundamental principles of kidney disease.

THE BUSINESS SIDE OF MEDICINE

Betterman II on the Business of Medicine. By Charles Elton Blanchard, M.D. Youngstown, Ohio: Medical Success Press, 1926. Pp. 249.

This second work by Dr. Blanchard in which he employs the literary device of expressing his own opinions through the fictitious Dr. A. Betterman, is as good reading as his first of the same type, *The Letters of Dr. Betterman.* The author states in his preface that he makes use of this device in order to lend the book "some small measure of humor and human interest that would not have been possible in discussing the subject in the form of a dry essay."

Dr. Blanchard is an ardent advocate of the principle that medicine should be an actual social service and not a business, and this is the message that he endeavors to convey in Betterman II on the Business of Medicine. "Just now in this transitional period of medicine," he writes, "when health service is coming to be more and more a collective effort, publicly paid, the economic side of medicine is of great concern to the profession. Our journals are publishing many articles about it, and at meetings of doctors in their societies the man who can talk intelligently about the business side of medicine is always certain of very flattering attention. It is hoped that this book will fit in just now and serve a good purpose in carrying to both physician and layman a larger fund of information about the subject."

Some of the subjects discussed are: the direct appeal, schools of medicine, including homeopathy, Christian Science, the Hahnemann School, osteopathy and chiropractic, and Mormonism; "straws that point," including the Henry Ford Hospital, the Sharon Health Association in Kansas, the social and health service of the Endicott-Johnson Shoe industry, the Life Extension Institute, etc.; evidences of medical chaos; present status of medicine; medical fads and fancies; how medical progress is made; and medicine in a new day. The appendices contain miscellaneous material, including some poems by the author and further data on some of the medical frauds and fallacies mentioned in the text.

The spirit of Dr. Blanchard's book may perhaps best be rendered by a quotation from its pages. After many months of early professional life went by in the career of "Betterman" in which practice decreased and funds for self and family were reduced to an alarming degree, he writes: "There in my office on those dreary November days and nights I awoke. I came to realize that life is action, fight, struggle. To live is to assert oneself; you in your way and I in mine. Your way or my way of selfassertion may not please the small minds about us, hence the sneer. The worshipper of precedent, the whatever is is right people, the standpatters of every walk of life—none of these could understand your selfasserting or mine. I had selected medicine as my mission in life. . . . I make no apology for it. I heard the call of it. I shall do my work, and I shall be paid for it; paid in money; paid in honor, and in a measure of love. All this was egotism. It had made presidents, put kings on thrones, Napoleons at the head of armies. Some way I would find to assert myself and to command those conditions I needed for my life. I would assert myself as a doctor and let it please or displease whomever it might. By New Year's Day of that year I had found my way, but it made me again a shocking medical precedent breaker—an iconoclast; my idol smashing has never yet been forgiven by some of my professional contemporaries, even now after nearly twenty years have passed and I am getting on into my white years."

In all of Dr. A. Betterman's idol smashing in the service of Dr. Blanchard, we never fail to feel, however we might disagree with some of his statements, that he is perfectly sincere and courageous in his opinions, and that there is often good reason for his belligerent attitude.

Medicoliterary Notes.

The National Tuberculosis Association has recently issued a useful little pamphlet entitled *Planning a Tuberculosis Sanatorium,* by T. B. Kidner. This pamphlet summarizes the latest and best information on tuberculosis hospital and sanatorium planning. Since the whole field of tuberculosis institutional planning has undergone radical changes recently, this publication fills a definite need.

* * *

A recent survey of the effects of the prohibition law in Finland, as summarized in a recent German journal, shows that, during the three years of the duration of the law, there has been an increase in drunkenness among the young men and women of cities, while in the case of the majority of the working classes the contrary is true.

* * *

Dr. Josef Loebel, a specialist of Czechoslovakia, has recently reclassified the human senses into eleven instead of five. His six extra senses are those of temperature, of pressure, of stinging, of gravity, the power sense, and the kinesthetic sense, which makes it possible for us, even when our eyes are closed, to know in what position our limbs are held.

* * *

Public Health Reports for April contains a useful list of nontechnical publications issued by the Bureau of the Public Health Service, covering a wide range of subjects and suitable for popular distribution.

* * *

From the Belgian Congo has just come an amazing account of an important Negro king who sued the hospital at Boma for the possession of his leg, which had been amputated as the result of a serious accident. The King, whose tastes are decidedly cannibalistic, endured the painful operation without a word of complaint, but immediately afterward demanded the severed limb. The surgeons flatly refused. The

king, however, being a powerful person, in his own community, brought suit in the tribunal of Boma and the court has just handed down a decision restoring the severed member to the king. Without further formality, the king took possession of his property and departed for home.—*N. Y. Times.*

* * *

Among the new publications on mental hygiene and related subjects are *Suggested Reading in Mental Hygiene,* by Kathleen Ormsby and Dr. Frankwood E. Williams, revised to April 1926; *Mental Defect and Poverty,* by Dr. Thomas H. Haines, reprinted from the 1925 Proceedings of the American Association for the Study of the Feebleminded; and *Understanding the Feebleminded,* also by Dr. Haines, reprinted from the same source.

* * *

The Baby and You! is the title of an attractive leaflet by Dr. Herman N. Bundesen issued as the first of a series of twelve monthly "letters" by Chicago's Health Department.

* * *

The Children's Bureau of the U. S. Department of Labor is issuing a set of six charts on posture standards for boys and girls intended for the use of physicians, nurses, physical education teachers, and clinics. The charts were planned on the basis of extensive observation and measurement of school children by Dr. Armin Klein of Boston, who is in charge of posture clinics for the Massachusetts General Hospital and the Department of Health of the City of Boston. Three types of figures are shown for both boys and girls—the thin, the intermediate, and the stocky, and descriptions of the distinguishing characteristics of excellent, good, poor, and bad posture are printed on each chart.

* * *

According to a recent report from the Jewish Telegraph Agency, there has been a serious crime wave during the past year even in Palestine. In 1925 crimes were committed to the number of 19,701, against 16,833 in 1924. Of these 98 were murders and 498 other heinous crimes. There were 36,640 arrests and 18,400 convictions. There are 13,726 persons in prison, 28 of whom are serving life sentences. The police force of Palestine numbers only one thousand and the gendarmerie five hundred in a population of about 800,000.

* * *

Fortschritt und Arbeitserfolg is the title of a new journal which began publication with the number for March 1926. The editor in chief is Dr. O. Schär, of Zurich, Switzerland. The aim of the journal is stated as an effort to establish a closer relationship between the medical profession and science, commerce and industry.

* * *

Prof. Alexander Sholomovitch, director of the narcotic section of the Russian Department of Health, has been making a study of alcoholism in Russia. He is credited with the statement that every year 6,000 Russian workers kill themselves with alcohol. He adds that sixty-five per cent. of all the workers are addicted to intoxicants, and that their average expenditure for alcohol is thirteen per cent. of their yearly earnings.

* * *

A new list of summer courses in public health work has recently been published in the *American Journal of Public Health.* This is as follows: Columbia University has shortened its usual six weeks' courses to two and three weeks with accompanying concentration of hours of attendance to accommodate health workers who cannot have an extended leave of absence. The summer session extends from July 6th to August 13th. The following courses will be given: public health administration and rural hygiene, public health engineering, school health inspection, epidemiology, policies and management of clinics, public health law, industrial hygiene, factory inspection, mental hygiene including its personal and social aspects, social hygiene, child hygiene, tuberculosis with emphasis on community aspects, and an introduction to population and health problems. The University of Michigan opens on June 21st for some courses and closes on August 13th. Tuberculosis and the community will be a special study. Other courses will include methods and materials in health education, general hygiene and public health, general sanitation, applied nutrition, principles and practices of medical social work and delinquency, mental hygiene and psychiatry, and community problems. Massachusetts Institute of Technology, through its Department of Biology and Public Health, will give the following courses: methods of teaching general biology, July 6th-August 3d; general bacteriology, July 6th-August 27th; health education methods, July 6th-27th; health records and statistical procedure, July 6th-27th; public health laboratory methods, July 7th-August 13th. The Pennsylvania School of Social and Health Work at Philadelphia will give courses in public health nursing, public hygiene, child health, school health, education, and nutrition.

* * *

The Monthly Labor Review for April contains an interesting article by Dr. Frank L. Rector, secretary of the American Association of Industrial Physicians and Surgeons, and editor of the *Nation's Health,* on Physical Examinations in Industry.

* * *

The leading article in *Public Health Reports* for April 9th is on the Public Health Nurse, by Surgeon J. G. Townsend of the U. S. Public Health Service.

* * *

A department of child guidance has recently been organized in the public schools of Newark, N. J., according to the *Mental Hygiene Bulletin.* This department is to operate within the school system a child guidance clinic, and it will also carry on the psychological work of the school system. The organization will include a psychiatrist, a chief of social service, a chief psychologist, adequate clerical personnel, and other workers.

* * *

The American Review for the Blind is the title of a new publication to be issued monthly in revised braille type, grade one and a half, by the American Braille Press, New York. The chief aim of the new journal will be to enable the sightless to maintain contact with current events.

* * *

The George H. Doran Company has announced a new series of books to be called the Humanizing of Knowledge Series. They will aim to carry out the suggestion made by Prof. James Harvey Robinson in his book, the *Humanizing of Knowledge,* that men of science cease to lock away from the layman in textbooks and technical works all the fascinating facts of science, and make an effort to contribute to the world's literature stories of scientific achievements in a form comprehensible to the layman, yet authoritative in subject matter and treatment. The first two titles of the series will be *Starlight,* by Harlow Shapley, and a rearrangement of the *Humanizing of Knowledge.*

* * *

Pygmalion, or the Doctor of the Future, is the latest addition to the Today and Tommorrow Series, published by Dutton. R. M. Wilson is the author.

* * *

Mosquitoes have decided color preferences, according to R. Ko, writing in the *Formosa Medical Society Monthly.* An experiment was made by attaching to a ceiling pieces of colored cloth at different intervals, on which 14,896 mosquitoes, most of them culex, were observed to light. Anopheles and Armigeres preferred yellow, white, deep red, and green. Culex and Stegomyia preferred blue, purple, red and black. The results of the experiment will be applied to extermination methods.

* * *

Dr. William Bierman, medical advisor to the National Council of Traveling Salesmen's Association, is the author of an interesting little volume recently published as the instrument for the application of a nation wide medical service for the care of sick travelers. Dr. Bierman was aided in his compilation and preparation of the book by the members of the Board of National Consultants. The "Guide" gives names, telephone numbers and office hours of general practitioners in towns of 10,000 population and over, and similar information about dentists and eye, ear, nose and throat, and genitourinary specialists in cities of 50,000 and over. There are also data on first aid, "when to see your doctor," and "your personal hygiene," and a preventive medical service to which any traveler may send complaints of conditions encountered which are inimitable to physical welfare on trains, boats, in hotels, etc. Dr. Bierman has secured the cooperation of city health officers and the U. S. Public Health Service in remedying such conditions.

American Medical Association

Seventy-seventh Annual Meeting, Dallas, Texas, April 19-23, 1926

(*Continued from page 706*)

The Scientific Proceedings

We present below abstracts of some of the more important papers read at the various section meetings.

SECTION ON PHARMACOLOGY AND THERAPEUTICS

CHAIRMAN, DR. THOMAS ORDWAY, OF ALBANY, N. Y.
SECRETARY, DR. N. M. KEITH, OF ROCHESTER.

The Inefficiency of Most of the Commonly Used Skin Antiseptics.—Dr. Martin B. Tinker and Dr. Henry B. Sutton, of Ithaca, N. Y., presented their findings in a study of various skin antiseptics in common use. Most surgeons, they said, seemed satisfied with their antiseptic technic, yet in reply to a questionnaire nine representative surgeons reported serious infections following clean operations. The average incidence of faulty union ranged from four per cent. to twelve per cent., with the different surgeons of the staff of one of the best organized hospitals. The authors stated their belief that the most frequent source of infection was the skin of the patient. A tabulation of the results of nine investigators of the use of iodine was given showing nine per cent. to forty-five per cent. growth of bacteria from the superficial layers of the skin and ten per cent. to one hundred per cent. from the deep skin. Also a graph and a tabulation of results of investigations were presented, showing over twelve per cent. superficial growth and over forty per cent. deep following the use of picric acid; over eighty per cent. growth with mercurochrome; and one hundred per cent. growth from the deep skin with dichloramine T and with iodine. In striking contrast the authors' tests showed no growth from the superficial skin with chlorinated lime paste and no growth, superficial or deep, following painting with five per cent. acriflavine solution. The solution must be fresh. It was very important, they said, that the bacteriological tests be carried out under conditions as nearly clinical as possible. Blood was frequently present clinically and added greatly to the difficulty in killing streptococcus and probably other germs; this had frequently not been taken into account in testing antiseptics. The laboratory teaching of antisepsis to medical students and nurses had proved conducive to greater care in hospital technic in the authors' experience and the importance of cooperation of laboratory workers was emphasized in further improving surgical results. Their conclusions are as follows:

1. The clinical results of which we have knowledge, from a considerable number of the best organized hospitals in this country, show that serious infections are by no means a thing of the past, and inasmuch as bacteria can be grown almost invariably from skin prepared by the antiseptics adopted as standard in these hospitals, we believe that the inefficiency of these antiseptics should be considered as a possible cause of their troubles.

2. Laboratory studies by a considerable number of investigators have indicated the inefficiency of iodine, the most widely used of the inefficient antiseptics.

3. Personal study of over fifteen hundred cultures (results in most instances confirmed by others) have demonstrated that iodine, picric acid, mercurochrome, kalmarid, will not kill the most resistant, pathogenic bacteria, under conditions of perfect contact, and are still less efficient if penetration is required.

4. Selective action of antiseptics must be considered: because an antiseptic kills one germ, even a resistant one, does not prove that it will kill all, unless all are tested.

5. The aniline dyes seem to deserve further investigation and probably wider use on the basis of apparent germicidal power, penetration, low toxicity, harmlessness to instruments and supplies and excellent outlining of the field.

6. More efficient antisepsis may be hoped for through laboratory teaching of medical students and nurses: more careful scrutiny of technic and cooperation of laboratory workers.

The Treatment of Erythremia.—Dr. Herbert Z. Giffin, of Rochester, Minn., reviewed the various methods which had been employed in the treatment of erythremia, both from the viewpoint of the literature and from personal observation. Twenty-two cases treated with phenylhydrazin hydrochloride were discussed in detail with respect to treatment only; thirteen cases had been collected from the literature to which nine were added.

Venesection, the administration of phenylhydrazin hydrochloride, and radiotherapy were clearly the most effective measures in the treatment of erythremia, he said. Phenylhydrazin by its specific effect in the destruction of red cells reduces the erythrocyte count and the blood volume and brings about more prolonged relief than venesection. Daily doses of 0.2 gm. until a total dose of 3.0 or 4.0 gm. has been given seems to be sufficient for the initial course of treatment. Phenylhydrazin hydrochloride is cumulative in effect, and a reduction in the erythrocyte count continues for as long as two weeks, and sometimes three weeks, after administration. Indications for its discontinuance are a reduction of the erythrocyte count to 4,500,000, a very rapidly developing leucocytosis, or a severe hemolytic crisis. A repetition of the treatment in from one to three months has been necessary, and it is likely that further experience will show that the administration of from 0.1 to 0.3 gm. weekly will maintain most patients in comfort. An inert preparation must be guarded against.

The technic of radiotherapy, both by means of the röntgen ray and radium, has not been satisfactorily

developed, but experience at present indicates that its effect is of a more permanent nature than that of phenylhydrazin, and that aplasia of the bone marrow is not produced. Severe and resistant cases probably can be most effectively treated by means of venesection and phenylhydrazin. One factor of great advantage in the use of these measures over radiotherapy is the ease of administration. Splenectomy for severe gastrointestinal hemorrhage has been successfully performed in one case reported.

The Measurement of the Cardiac Output and Its Variations.—Dr. G. Canby Robinson, of Nashville, Tennessee, said that the principle underlying much of the work directed at the measurement of the cardiac output was set forth in 1870 by Fick, who stated that the minute output of the heart could be calculated by measuring the amount of oxygen consumed by the body each minute and the amount of oxygen removed from each unit of blood as it passes through the capillaries. This principle has recently been applied to men, and an accurate method has been devised by Burwell and Robinson.

A series of observations on normal resting subjects, studied in a half reclining position, has been made. In this series the minute output of the heart varied in different individuals from about three and a half to six and a half litres, and from about fifty to one hundred c. c. per beat. Striking variations were found in the output of the heart of a patient with exophthalmic goitre studied before and after thyroidectomy.

Variations in the output of the heart occurred with change of position, and evidence was presented that diminished cardiac output is beneficial in cases of heart failure. An experimental study indicated that digitalis might produce its beneficial results in some cases by diminishing the cardiac output. The ethyl iodide method of Henderson was briefly discussed.

SECTION ON NERVOUS AND MENTAL DISEASES

CHAIRMAN, DR. JAMES B. AYER, OF BOSTON.

SECRETARY, DR. JAMES J. POLLOCK, OF CHICAGO.

Neurological Manifestations in Pernicious Anemia; a New Conception Relative to the Etiology.—Dr. A. L. Skoog, of Kansas City, Mo., presented a brief historical sketch of pernicious anemia. Addison, he said, first wrote about the disease in 1849. He then pointed out that pernicious anemia still remained an incurable disease. Possibly more might have been accomplished had we had a better knowledge regarding its causation. Improvement and frequent remissions, sometimes lasting several years, were noted frequently. Where there were definite symptoms on account of an involvement of the spinal cord, brain, and peripheral nerves, the outlook was more serious.

The significance of pernicious anemia in a general way was understood fairly well. Frequent involvement of the nervous system and its importance had not been recognized adequately, but lately there had been much improvement respecting this feature of the malady. The nervous system, he said, was involved in eighty-six per cent. of the cases. There would be found an absence of free hydrochloric acid in at least ninety-eight per cent. A few instances were on record where the acid was absent a number of years before sufficient clinical symptoms appeared to make a positive diagnosis of pernicious anemia. However, it must be remembered that free hydrochloric acid might be absent in individuals seemingly well. The blood picture received earlier and more attention from medical men than the alimentary or neural manifestations. The high color index long had been regarded as a very important diagnostic sign.

Clinical and pathological studies of the neural system would suggest a division into three groups, namely, 1, the spinal cord; 2, the peripheral nerves, and 3, the brain. The first is by far the most important and best known. Various sensory disturbances were among the earliest manifestations. Various degrees of paralyses and disturbances of coordination were frequent. Walking may become impossible.

Spinal cord.—Striking pathological changes in the spinal cord is the rule with a few exceptions. The clinical manifestations may not be explained always by the gross and microscopic findings. There are a few cases on record where the clinical findings indicated an involvement of the cord, but the autopsy revealed no changes. It is difficult to appreciate this discrepancy.

Neuritis.—Some difference of opinion exists relative to the frequency of a true neuritis in pernicious anemia. However, many cases are on record and a few diagnoses have been proved by autopsy. Three years ago the author reported one case from the University of Kansas, where the patient was suffering from a well defined subacute combined degeneration of the spinal cord in pernicious anemia. The clinical findings for a severe parenchymatous neuritis were quite definite.

Psychotic manifestations.—Mild, frequently indescribable, changes in the mental state are noted quite often. A severe or major psychosis appears infrequently. Impaired cerebration with marked memory defect belongs only to the late stage as a rule.

Many infectious diseases including influenza, enteric disorders, typhoid, scarlatina, sprue, malaria, and syphilis have been accused of being the cause of a factor in the etiology.

For a long time our attention has been directed to an intoxication from the lower alimentary tract. Many research workers attribute this to an abnormal flora in the ileum and possibly the duodenum. It has been demonstrated in human beings and in animal experimentation, that if there is no free hydrochloric acid secreted or found in the stomach, quite soon many of the bacteria normally found in the large intestine, such as coli communis, Bacillus Welchii, and streptococci will thrive in the small intestines and even be found in the stomach.

It is desired to offer a theory which could clear up the nature of the cause of pernicious anemia. Attention will be called first to a few salient facts. Pernicious anemia has its onset almost entirely between the ages of forty and sixty. It is practically unknown before the thirty-sixth year. It is considered a chronic and fatal disease. Our observations and records of the earliest stage may be quite deficient. The recorded pathological work deals chiefly with

terminal states. Three great and important anatomical and physiological systems of the body are concerned in the clinical findings and terminal morbid changes; namely, the blood with its hemopoietic organs, alimentary tract with various secreting glands, and the nervous system. All of these organs are the seat of morbid processes during some portion of the course of the illness in more than ninety per cent. of the cases. The initial deviations from the normal may be found in the field of pathological physiology only.

The author said he had arrived at the conclusion that pernicious anemia had its origin in some deviations from the normal originating in the vegetative nervous system. This derangement was purely physiological at its inception and for a certain period following. Attention might be focused on three great vertebral plexuses in the chain of the vegetative nervous system, but an impaired function of the solar plexus should be considered in particular.

One must look further, he said, for operative causes which could produce such profound changes in the vegetative nervous system. Attention was called to the fact that pernicious anemia occurred especially in hypertensive persons among the more highly civilized peoples; that the disease was found among males about three times as frequently as in the female; that it made its appearance almost entirely in the fifth and sixth decades of life. Anxiety and stresses relative to the problems of life, together with this age of declining functions and slow tissue retrogressions, should engage attention. When such conditions had been present over a long period with insidious, slow, continuous insults, there would be registered either physiological or pathological evidence in the three prominent plexuses of the vegetative nervous system. The solar, also designated by the name celiac, epigastric and abdominal aortic, was the major one concerned in this problem. He considered it unnecessary to call attention to a number of brilliant physiological experiments on record wihch showed the effect of emotional states on digestion. Secretions in the stomachs of cats and dogs had been checked completely at any stage by the introduction of factors of great annoyance or fear.

SECTION ON LARYNGOLOGY, OTOLOGY, AND RHINOLOGY

CHAIRMAN, DR. SAMUEL IGLAUER, OF CINCINNATI.
SECRETARY, DR. W. V. MULLIN, OF CLEVELAND.

Maxillary Deformations.—Dr. Harvey Stallard, of San Diego, Cal., spoke on the anatomy of the maxillæ. From a dental point of view the normal complete maxillary structure should have sixteen teeth, each fully developed and in its proper typal place in the skull. There was no fixed size for a normal dental arch nor any definitely determinable curves it should have, but all of its features were dependent upon, 1, the type of the individual and 2, the most favorable environment for full oral development. As the maxillæ develop so grew the visceral portion of the face, but how much the maxilla owed its development to the presence and uses of the teeth no one knew. Fairly well developed faces and jaws sometimes appeared in children lacking nearly all of their permanent teeth. He said one maxilla may be deformed considerably in one or more of its processes or its body, without affecting proportionately as great a deformity in the alveola and palatine processes. The maxillary dental arch can be deformed in three directions according to its three courses of growth: 1, it may be narrowed or it may widen disproportionately; 2, it may be shortened or it may elongate; and 3, it may be prevented from growing downward or it may descend too far. Combinations of these faults, either excessive or diminished growths, produced the great variety of maxillary deformations, usually attended with companion deformities in the mandibles, the nasal cavities, and sometimes even in the orbits. The author discussed the kinds of maxillary deformations referring to two main types: the V shaped and the saddle shaped. Of the latter there were some thirty varieties, depending on the character of the deforming objects exerting the pressure. The V shaped type had fewer variations, owing to the uniformity of the external objects directing their formations. In each kind, the contraction, descent and elongation may be limited chiefly to a half of the face constituting the unilateral type of the deformation. The upper dental arch may be prevented from widening and elongating by external forces causing all the upper teeth to shut inside the lower teeth so characteristic of the contracted-retracted maxillary deformations.

In modern man, only rarely did the upper jaw overdevelop in all three directions, a deformation found in the mandibles of some patients having dwarfed maxillæ. In children or young adults, such deformations were so rare that reports of them have not been clearly recorded, but occasionally individuals were found having expanded and protruded premaxillæ, which were usually accompanied by mandibular retraction. The upper jaw may be shortened and not narrowed, as when the upper anterior teeth and their alveolar processes were pushed backward, so that all the upper teeth bite posterior to normal. Among the causal factors the author spoke of the protoplastic factors and environmental factors, and said that fundamentally heredity is at the basis of all living processes and forms. He also spoke of pressure factors, both prenatal and postnatal; functional pressures; perverted respiratory and masticatory functions; deglutitory perversions, which affect the positions of the teeth, were those manifested in the tongue and cheeks during swallowing.

The theory of lack of pressure was also taken up at some length. Referring to the related nasal deformations accompanying maxillary contractions, the author said that since the exactitude of occlusion was so definite it taught him the importance of external pressure, and he surmised that some of such undoubtedly affected the shape and volume of the nose. It would only be natural to conclude that any pressure constricting the maxillary apparatus would narrow the nasal cavities. In conclusion, the author suggested that a study of nontraumatic septal deviations and asymmetrical noses be made in young adults, comparing them with the malocclusions and the postural habits of the individuals. A study should be made of the size, health and drainage of the sinuses, particularly the maxillary, in connection with the asymmetrical forms of malocclusion and their corresponding pillow habits, using the more normal sides as cheeks. The proposed study, at least,

seems promising, the author said, and would be, to the common facial deformations, an approach similar to that made by physicians in their study of deformations elsewhere in the body, particularly in the cranium, chest, spine and shoulders.

Injected Iodized Oil in the Röntgen Ray Diagnosis of Tracheal and Bronchopulmonary Conditions.—Dr. Samuel Iglauer, of Cincinnati, Ohio, in his chairman's address, said that Jackson was the first to introduce radiopaque substances into the bronchial tree as an aid to x ray diagnosis. For this purpose he insufflated dry bismuth through the bronchoscope. Lynah and Stewart, in 1918, for the first time injected a fluid substance as a contrast medium. The fluid substance consisted of bismuth suspended in olive oil. They obtained excellent röntgenograms of lung abscesses and also noted some therapeutic effects from the bismuth. Sicard and Forestier, in 1922, reported on the use of iodized oil, lipiodol, forty per cent. iodine content, which after injection into the bronchial tree gave remarkable outlines of pulmonary lesions. DeLille, by this method, was able to detect bronchiectatic lesions in children who were housed in a tuberculosis sanatorium, under the mistaken diagnosis of tuberculosis. The French school introduced lipiodol either with a long laryngeal syringe or through a puncture through the cricothyroid membrane. In the United States, Clerf and Ballon have used the bronchoscope. The bronchoscopic method is the most certain but not universally applicable. The Austrian school introduced iodipin which they have substituted for lipiodol, through a retention catheter passed through the glottis. Nather cocainized the pharynx and larynx and states that the patient will then swallow the oil into the trachea.

Introduction of oils is a laryngological problem. The laryngeal syringe demands considerable skill on the part of the physician. Puncture through the cricothyroid space is not certain and at times the oil is injected into the peritracheal tissues. The bronchoscopic method is the most certain, but not universally applicable. The laryngeal catheter requires considerable cooperation on the part of the patient.

The author has devised a new method which consists in the introduction of a specially devised double barrelled intubation tube, i. e., an intubation cannula. A rubber tube is connected with one barrel. After cocainizing the larynx the intubation tube is introduced and the iodized oil is injected through the rubber tubing, which projects from the patient's mouth. The second barrel of the intubation tube permits the patient to breathe while the oil is being injected. The whole procedure may be carried out under the fluoroscope and is applicable to children as well as adults. By placing the patient in any desired position the flow of the oil may be directed into the dependent portion of the lung. The author has also devised a new method of demonstrating subglottic stenosis of the larynx. A finger cot filled with a radiopaque fluid is pulled into the larynx above the tracheal cannula, which the patients usually wear. A röntgenogram is then taken showing the extent of the stenotic area in the larynx. In conjunction with Samuel Brown, George Benzing and Warren C. Breidenbach, the author has examined a series of lung conditions, including cases of bronchiectasis, lung tumors, pulmonary tuberculosis, collapse lungs and pulmonary abscesses. The method is particularly valuable in the study of bronchiectatic cavities and is also of value in the study of the other diseases mentioned. The intubation method described appears to be the simplest method yet devised for the introduction of contrast substances.

SECTION ON DERMATOLOGY AND SYPHILOLOGY

CHAIRMAN, DR. FRED WISE, OF NEW YORK.

SECRETARY, DR. JAMES H. MITCHELL, OF CHICAGO.

A Distinctive and Severe Form of Erysipeloid Among Fish Handlers.—Dr. Joseph V. Klauder, Dr. Linwood L. Righter, and Dr. Malcolm J. Harkins, of Philadelphia, said that the skin disease which Rosenbach designated as erysipeloid was now definitely established as an infection with a human strain of the bacillus of swine erysipelas. This disease was one form, a mild one, of erysipeloid. The clinical symptoms of this disease were discussed. Subsequent observations disclosed another form, a severe one, of erysipeloid, due to infection with a swine strain of the bacillus of swine erysipelas most frequently seen in veterinarians and laboratory workers accidentally inoculated with culture of such organism and in butchers, farmers, meat inspectors infected through handling diseased pork. The clinical symptoms of this form of erysipeloid were much more severe than the mild form; moreover, lymphangitis, adenitis and extension of the disease above the wrist was frequent.

This report was based upon a study of about one thousand cases of erysipeloid among commercial fishermen working in fish ponds along the northern New Jersey seacoast. The disease commonly appeared on the hands at the site of trauma caused by the bite of fish, or the prick of the scales, spines or fin of fish. It was intimately associated with the handling of slimy, spiny fish. It also appeared on various parts of the body at the site of trauma inflicted through soiled fishing clothes. The symptoms were those of erysipeloid, the severity of which approached the picture of swine erysipelas in man. In addition, constitutional symptoms were common. Acute cases have been observed. Factors which determine incidence of the disease and the geographical distribution of the infection among fishermen was discussed. It appeared that the disease was prevalent among commercial fishermen in all parts of the world. The infection as an occupational disease was discussed. From replies to a canvass by mail of many commercial fisheries handling live fish, fish shipped to the market and canners of fish, it was apparent that the disease was an important one of the fishing industry and known in these circles as fish poisoning. In personal studies the infection was the chief cause of disability among commercial fishermen handling live fish. It appeared that the infection from handling fish shipped to the market was milder, conforming clinically to the mild form of erysipeloid.

The universal dissemination of the bacillus of swine erysipelas and its habitat in dead matter of

animal and plant origin was discussed, and the different animal strains of the organism were discussed. Differences in the symptomatology of the infection in man could be accounted for by differences in the virulence of the organism, depending upon the source of infection.

From patients presenting the reported type of erysipeloid, the bacillus of swine erysipelas was recovered by culturing an excised piece of the involved skin. Bacteriological studies were reported. The organism was highly virulent to pigeons and to white mice in the smallest amount injected—.0003 c.c.

The author said that agglutination and complement fixation studies were also conducted. Unsuccessful attempts were made to demonstrate the bacillus of swine erysipelas in bacteriological studies of fish slime. The foregoing studies suggested a fish strain of the bacillus of swine erysipelas. From the strain or organism recovered, a serum was being prepared for treatment. Local treatment of the infection was of little value since it apparently does not shorten the period of disability, which ranged from two to six weeks. The treatment of erysipeloid with the serum of swine erysipelas as reported in the German literature was discussed. Such treatment was considered very effective.

SECTION ON OPHTHALMOLOGY

CHAIRMAN, DR. ARNOLD KNAPP, OF NEW YORK.

SECRETARY, DR. WILLIAM C. FENNOFF, OF DENVER.

The Prostate as a Remote Focus of Infection in Ocular Inflammations.—Dr. William Zentmayer, of Philadelphia, Pa., said that attention is called anew to the importance of searching further than the nose, mouth and throat for the portal of infection in ocular inflammations and emphasis laid on the fact that this is not infrequently found in the prostate. He gave a summary of de Schweinitz's elaborate thesis on the relation of metastatic inflammations of the eye.

Histories of four cases were given in which in all probability the source of infection was the prostate gland. The first was a case of uveitis undoubtedly due to a focus of infection in the prostate, of gonococcal origin, and in which the infection lost its specificity probably under treatment with gonococcal vaccines. This conclusion is strengthened by the fact that after the prostatic condition cleared up there was no recurrence of the ocular inflammation. It illustrates the persistence over many years of the gonococci in the genitourinary tract, and their menace as a metastatic agent. The second case was one of iritis in which the etiological factor was a focal infection originating in the genitourinary tract, apparently in the prostate. In this and in the former case a severe exacerbation of the ocular inflammation resulted from massage of the prostate. The third case would fall in the class in which there are several possible portals of infection. Inasmuch however as attacks occurred after the removal of two which were eradicable, and there was a prostatic infection with positive gonococcal complement fixation, it is highly probable that the etiological factor here was the prostatic trouble. The fourth case was one of central exudative retinochoroiditis where the physical and laboratory examinations were negative except for a moderate von Pirquet reaction and very evident prostatic infection, in which after a long period of quiescence a fresh attack of retinochoroiditis followed one month after a second attack of gonorrhea.

The paper also contains the views of Dr. B. A. Thomas concerning the prostate as a source of infection. The following conclusions are given:

1. The prostate may be the source of infection in certain ocular inflammations. 2. The prostatic inflammation is probably more often nongonococcal than gonococcal. 3. The metastasis, as in other focal infections, may be to any of the ocular tissues susceptible of inflammatory reaction, but the uvea and cornea are probably most often involved; the latter, and also the iris alone, especially when the gonococcus is present. 4. The fact that an inflammation persists after the removal of a suspected focus of infection does not prove that this was not the primary source of infection as the resistance of the tissues may have been so reduced by this inflammation as not to be able to withstand the action of the organisms or toxines of a much less virulence from some other part of the body. 5. Only when a metastatic inflammation subsides after the removal of one possible source of infection does it prove this to have been the excitor.

Tolerance of Foreign Bodies in the Posterior Segment of the Eyeball.—Dr. Albert E. Bulson, Jr., of Fort Wayne, Indiana, pointed out that while in the great majority of instances foreign bodies which penetrate into the interior of the eye entail its ruin and too frequently even that of its fellow, they occasionally are met with situated harmlessly in every part of the globe. He gave a short history of thirty-five cases reported in the literature in which foreign bodies have lain innocently in the posterior segment of the eye for a considerable time without serious results, and in not a few instances with no impairment of central vision. He quoted Hermann Knapp (*Archives of Ophthalmology,* 11; 222; 1882) to the effect that we should not forget that toleration even if once established, was not illimited, as the foreign body after any number of years might become loose and produce irritation, or without coming loose may produce repeated attacks of internal inflammation. He also quoted Adams (*Transactions of the Ophthalmological Society of the United Kingdom* 3:115:1883) to the effect that such cases as reported could not fail to compel us to reflect whether we have not in times past been somewhat hasty in advising enucleation, and possibly too energetic in endeavoring to extract foreign bodies.

After the röntgen ray came into use, it became practically universal to locate foreign bodies within the eye by their aid, and if the foreign bodies could not be withdrawn by magnet, the eye was enucleated. In consequence, very few cases had been reported within the last few years in which foreign bodies had been retained within the eye.

For the purpose of adding to the number of cases on record, Dr. Bulson reported three cases. In the first case, a piece of iron penetrated the eyeball and lodged on the retina where it remained during the ten years that the patient was under observation, without serious disturbance, though when the patient was

last seen he had a cataractous lens. In the second case, a piece of steel penetrated the eyeball and lodged in the retina, where it could be seen plainly by ophthalmoscopic examination over a year later. The eye was perfectly quiet and central vision was normal with correcting lenses, and the field of vision was normal except for a large scotoma marking the site of the foreign body. In the third case a piece of steel penetrated the eyeball and remained for a year before creating a disturbance, and enucleation became necessary.

Numerous authors were quoted to the effect that the earliest possible removal of the foreign body was the first thing to be considered, and that it usually should be done at any cost, even to the removal of the eye, but he pointed out that even after the successful extraction of a foreign body, the safety of the eye was not assured. For the majority of the cases useful vision would be lost, and the injured eye would have to be sacrificed for the safety of the other. Though the eye seems to do well for a time, it may become the seat of a slow uveitis that after weeks or months will destroy it. Admitting that while foreign bodies may lie in the background of the eye for long periods of time, even with the retention of good vision, and that they never can be trusted owing to the fact that they are liable to cause inflammatory and degenerative changes, yet the argument is advanced that many of these cases are just as well off if a waiting policy is pursued, providing the case is kept under observation so that with the first indication of trouble enucleation or other appropriate attention can be instituted. The author quotes Beard (*Ophthalmic Surgery,* 1910, page 622) who offers some rules of guidance for intervention and abstention.

The author's final conclusions are as follows:

1. It is assumed that in the majority of cases, loss of vision as well as loss of the eyeball is due to inflammatory, degenerative and structural changes brought about directly or indirectly by the trauma and infection, and not to the mere presence of a foreign body in the posterior segment of the eye, and that the removal of the foreign body does not in itself improve the prognosis, as it is probable that the ultimate loss of vision or eyeball, or both, in a series of comparative cases, would be as conspicuous in cases in which extraction had been performed as it would be in those in which extraction had *not* been performed.

2. In a large percentage of cases the patient is as well off if the foreign body is left in the posterior segment of the eye as he would be if it is extracted, particularly if the eye traumatism would be increased by the extraction, and for the following reasons:

a. Even if the foreign body is removed successfully there is no assurance that the eye, sooner or later, may not become the seat of inflammatory and degenerative changes that may destroy sight and perhaps require enucleation. Furthermore, the effort at removal may do more damage to sight and the integrity of the eye than would be the case if there had been no intervention.

b. If sepsis has been introduced, or iridocyclitis has set in, the prognosis is as good with the foreign body in the eye as with it out, for in either case enucleation would be adopted if the process did not yield with reasonable promptness to appropriate treatment. It is entirely problematical whether or not the foreign body in the posterior segment of the eye in itself would in any way alter the course of the inflammation. Perhaps copper may be taken as an exception.

3. The cases herein reported, and many more of a similar nature that probably could be obtained, indicate that preservation of useful and even fairly normal vision, or eyeball, or both, is possible for prolonged periods of time, perhaps during the lifetime of the patient, with retention of a foreign body in the posterior segment of the eye, and it is justifiable to assume that these patients would not have fared any better nor would it have been any safer had intervention been adopted at any time in the course of any of the cases.

4. Every case is a law unto itself, but most of our teaching concerning the subject under discussion has been toward too much radicalism in electing intervention in foreign body cases. The plea therefore is made that there should be less haste in advising enucleation, and less general inclination to be energetic in endeavors to extract foreign bodies from the posterior segment of the eye. More time and thought should be given to an analysis of the conditions presented in each individual case, and the possibilities that may follow intervention and nonintervention. Furthermore, more time and care should be given treatment. The danger of sympathetic inflammation in the average perforating injury with retention of a foreign body in the eye is as great after the foreign body has been removed as it was before, and in either case the well trained oculist will recognize the time for the cessation of conservatism.

5. Foreign body cases of the type under discussion, whether the foreign body is removed or not, potentially are dangerous throughout the life of the patient, and the patient should be so advised in order to be on his guard and ready to consult a competent ophthalmologist at the first indication of trouble. His best interests are not conserved by the ultraradicalism advocated by some of our ophthalmological writers.

Mucous Membrane from the Middle Turbinate in Plastic Surgery of the Eye.—Dr. Meyer Wiener, of St. Louis, Mo., said that providing sufficient mucous surface for covering defects of the conjunctiva can be readily secured without harm to the patient, its advantages over skin grafts must be admitted. Skin, especially in symblepharon, is unsightly, rough, exfoliates, often gives off unpleasant odor with discharge, and always retains the general characteristics of skin. Mucous membrane has all of the advantages of skin with none of its disadvantages. The difficulty heretofore has been to obtain enough mucous membrane from the host, to supply the conjunctival defect, without seriously inconveniencing the patient. This has been accomplished by utilizing the mucous membrane carefully dissected off of the patient's middle turbinate after its removal. Naturally this can only be done with adults, unless the mucous membrane is taken from an individual other than the one to be grafted, which has not yet been tried. The transplanted mucous membrane, which at first is quite thick, gradually becomes thinner and more closely assumes the features of the conjunctival mucous membrane. No disadvantage has resulted to any of the patients operated upon from their loss of the middle turbinate.

Abstracts from Current Literature

ENDOCRINOLOGY

Otorhinolaryngological Symptoms of Incipient Basedow's Disease.—J. Erath (*Revue Française d'Endocrinologie,* March-April, 1925) describes this form as occurring frequently in Switzerland after the use of iodine preparations for the treatment of goitre. Among these symptoms are aphonia with tremor of the larynx, a sensation of constriction at the throat, a small goitre, paroxysmal rhinorrhea, frontoorbital neuralgia, subjective noises in the ears with normal hearing, hyperesthesia of the labyrinth, and the various symptoms of cardiovascular erethism encountered in Basedow's disease.

Pathogeny of Ozena as a Sympathetic Endocrine Disturbance.—In nearly all the cases of ozena examined by E. Halphen and R. Schulmann (*Revue Française d'Endocrinologie,* March-April, 1925) thyroid, ovarian, or sympathetic disturbances were found, such as acrocyanosis, chilblains, hot flashes, mydriasis, reversal of the oculocardiac index. The thyroid body was almost always hypertrophied, menstruation always irregular, but the results of the "biological tests" with adrenalin and pituitary extract were never demonstrative. On the contrary, injection of adrenalin invariably produced diminution or disappearance of the crusts and the evil odor. The authors conclude that the sympathetic is the system chiefly affected in ozena. This affection then would be due to a disturbance of the sphenopalatine branch, provoked by a lesion of the endocrine glands, in its turn due perhaps to syphilis or tuberculosis.

Goitre Incidence in School Girls of New York City.—I. H. Goldberger and A. K. Aldinger (*American Journal of Diseases of Children,* June, 1925) found that a definite thyroid incidence exists among the school children in certain localities of the United States, known as goitre belts. Goitrous regions are identified as localities deficient in iodine content of the water supply, salt and air. Simple goitre is a disease of iodine starvation and is evidenced by an enlargement of the thyroid gland. It is more prevalent in girls than in boys. The etiology of goitre is unknown, although it is known to develop when the iodine content of the thyroid gland falls below 0.1 per cent. of the total dried substance of the gland. Thyroid enlargements make their appearance at four periods of life: Fetal, adolescence, during pregnancy and at the menopause. Simple goitre is a compensatory hyperplasia of the thyroid gland, developing during the course of certain metabolic disturbances of unknown origin, but immediately dependent on a relative or on an absolute deficiency of iodine. The latter exercises both a prophylactic and a curative effect on simple goitres.

The authors' study disclosed that enlarged thyroids were most prevalent between the ages of thirteen and fifteen years. The greatest incidence of thyroid enlargement was in the slightly enlarged group, 17.2 per cent; moderately enlarged, 2.6 per cent; markedly enlarged, 0.5 per cent.; total 20.3 per cent. Thyroid enlargement in colored children is approximately seven per cent. less frequent than in the white children in this study. Some observers state that a racial immunity to endemic goitre exists. Although this study suggests that the percentage of incidence of normal glands seems to vary inversely with the activity of the menstrual cycle, the findings should not be construed as conclusive. A distinct relationship exists between thyroid incidence and such signs as tremor, mottling and exophthalmos. Girls whose mothers were of foreign birth showed the least incidence to thyroid enlargement.

Thermogenesis as the Fundamental Function of the Adrenal Medulla and Cortex.—Personal study and much evidence in the studies of others convince C. E. de M. Sajous (*Endocrinology,* November-December, 1925), that cholesterol is the systemic antithermic through its established property as an antihemolytic in inhibiting the thermogenic function of oxidized lecithin. He believes that the adrenals synthetize adrenoxin, lecithin, and cholesterol. The red corpuscles while passing through them appropriate these thermogenic agents and, after passing through the lungs to have their adrenoxin take up oxygen from the air, proceed to the tissue cells. There is thus a chain of structures in physiological sequence, the adrenals, the red corpuscles, the blood platelets, and the tissue cells, which all contain the same thermogenic agents, with the adrenals as synthetic organs acting as source of supply. The secretion of the thyroid gland is the antagonist of cholesterol in thermogenesis; it increases the lability or sensitiveness of the lecithin phosphorus to oxidation, and thus enhances thermogenesis correspondingly. This oxidation of the phosphorus in lecithen by the oxygen of the adrenoxidase it is which sustains tissue respiration.

The Influence of Desiccated Spleen and Bone Marrow Feedings Upon the Erythrocyte and Hemoglobin Contents of the Blood.—S. Shapiro and F. H. Frankel (*Endocrinology,* November-December, 1925) administered to a series of quiescent hospital patients five grains each three times a day of desiccated spleen and bone marrow. Blood counts were made three times a week. In alternating periods of about a month in duration the feedings were given and withheld. During the periods of feeding there occurred increases in the erythrocyte and hemoglobin contents of the blood, which returned to about the prefeeding level when the preparation was withheld.

Röntgentherapy of Pituitary Tumors.—Herrnheiser (*Fortschritte auf dem Gebiete der Röntgenstrahlen,* April, 1925) reports two cases. The first was of acromegaly of two years' standing in a woman thirty-two years old, presenting the typical clinical picture of the disease. In the röntgenogram the sella appeared much enlarged and destroyed. The patient had headache constantly increasing in severity and marked disturbance of vision. From the time of the first irradiation she experienced improvement, and finally attained complete freedom from headache, arrest of the acromegalic process, and subjective well being. The second case was that of a twenty-four year old man with the typical picture of genitocerebral dystrophy with pituitary dwarfism. Röntgenologically the sella was greatly enlarged and destroyed, and lime deposits were seen in the tumor. The patient gave unmistakable evidence of brain pressure in intense headaches, vomiting, and disturbances of vision. Five weeks after the first raying the eyesight and headaches were greatly improved. In the first case four fields, in the second three were rayed, each receiving eight Holzknecht units, 180 kilovolts at forty centimetres focal distance through half a centimetre of copper and one of aluminum. In another case of acromegaly, irradiated to the limit, no improvement took place. The result depends on the radiosensitiveness of the tumor, which is very variable. Overdosing may do great harm. The author advises beginning with very mild doses and increasing them as indicated.

Heart in Hyperthyroidism.—V. J. Thacker (*Medical Clinics of North America,* January, 1926) remarks that as to the incidence of definite cardiac damage in hyperthyroidism, twenty-five per cent. would be an average figure with severe cardiac damage in from two to six per cent., depending on the various series of cases considered.

In reference to the origin and reduction of cardiac damage in this disease the old mechanical pressure theory is no longer tenable. The toxic theory has been coming into favor, as it is the only theory that adequately explains all the cardiac phenomena occurring, as observed clinically as well as at necropsy. However, most observers consider the mechanical theory of increased metabolism, necessitating increased cardiac work, an important factor, making the heart more susceptible to the thyrotoxic influence, this toxin arising from the thyroid gland, being either an increased secretion of thyroxin, an altered secretion, or both.

The steps in the production of cardiac damage are apparently as follows: Increased metabolism, increasing cardiac work as shown by tachycardia and increased output of blood; fatigue results and leads to hypertrophy and attendant dilatation and atony. The toxic action comes into play, leading to degeneration in susceptible hearts. In time cardiac damage manifests itself by further dilatation and hypertrophy and even heart failure without arrhythmia, or much more frequently arrhythmia, usually auricular fibrillation, occurs usually with heart failure, most commonly of the congestive type.

The actual pathology found at necropsy seems to confirm the toxic theory, since degenerative and nonsuppurative in-

flammatory lesions are rather constantly found and reported by various investigators.

Of the special disorders of the heart, auricular fibrillation is essentially the only important arrhythmia found. The constancy with which it is found in damaged hearts is striking. It usually means, when of the established type, that the heart is rather seriously involved. Practically all cases of heart failure show it. Paroxysmal fibrillation is not as serious, but usually precedes the established type. Auricular fibrillation, then, generally means that the heart is definitely damaged and failing. Furthermore, its presence further decreases cardiac efficiency and increases the strain on it, thus favoring further heart failure. In its production long duration of hyperthyroidism seems to predispose, as the incidence increases with age, and after fifty years of age fibrillation is an almost constant accompaniment of heart damage.

Other cardiac disorders are of minor importance and not characteristic or frequent.

Cardiac enlargement is present constantly in damaged hearts, both dilatation and varying degrees of hypertrophy accounting for it. Murmurs systolic in time occur, but are not diagnostic and are not due to valvular disease in uncomplicated cases, but to left ventricular dilation with a relative valvular insufficiency.

Longstanding Hyperthyroidism with Spontaneous Subsidence.—C. L. Eshleman (*Medical Clinics of North America,* January, 1926) reports a case in which the toxic symptoms associated with the thyroid dysfunction were prominent and serious from 1903 to 1916. During the next two years these symptoms began to abate, and the patient gained much in weight with gradual diminution in the size of the gland, until at the time of writing the case was really no longer a toxic thyroid, but merely a case of myocarditis, with the patient able to carry on, but with greatly diminished activity. This is merely the residual damage of many years of thyroid intoxication, and the patient is now, at fifty-seven years, a chronic cardiac case.

This case brings to mind certain facts: 1. Some thyrotoxic patients become quiescent and spontaneous subsidence of toxicity occurs, which cannot be directly attributed to any special treatment. 2. Not infrequently this occurs in mild cases, in the severe typical Graves' disease rarely. 3. Complete disappearance of all signs of enlarged thyroid can occur. 4. The opposite condition of myxedema may develop in later years. 5. The residual effects of chronic hyperthyroidism manifest themselves chiefly in damage to the heart muscle, usually considered to be a toxic myocarditis. 6. Where spontaneous or surgical recovery occurs, the extent of myocardial damage largely determines the patient's future activity. 7. Any prolonged postponement of surgical measures is likely to result in permanent myocardial damage.

Postoperative Thyroid Reaction.—L. F. Sise (*Surgery, Gynecology and Obstetrics,* July, 1925) reports that in the great majority of toxic thyroid patients, under nitrous oxide oxygen anesthesia, with the technic used in this clinic, a postoperative reaction is indicated, roughly proportionate to the increase above normal in pulse rate, pulse pressure, systolic blood pressure, and respiration. In a small group of patients the disease has apparently progressed beyond the condition in which this is true. With them the postoperative reaction and especially the postoperative mortality is roughly in inverse proportion to the increase in the pulse rate, pulse pressure, systolic blood pressure and respiration. This small group is asthenic and apathetic and their operative mortality is high.

A much more accurate forecast of the postoperative reaction of toxic thyroid patients can be made by taking into account both the preoperative condition of the patient and the course of the anesthesia than can be obtained from either of these procedures alone.

Reidel's Chronic Thyroiditis.—A. F. B. Shaw and R. P. Smith (*British Journal of Surgery,* July, 1925) say from a study of the literature and their own cases that they have been unable to collect any evidence that the condition is an involution following a previous goitre. In a few cases there has been a history of goitre or Graves' disease in other members of the family. They believe that the disease is a chronic inflammatory process of a granulomatous nature, and this view receives ample support from its clinical characters and the anatomical changes in the gland.

As to the relation, if any, between Riedel's struma and fibrous atrophy of the adrenals, the authors were unable to express an opinion, except to say that the anatomical changes were strikingly similar. That the alterations in the thyroid in their case are not the result of some disturbance in the gland following adrenal disease seems to be proved by Huebschmann's observation that in fibroid atrophy of the adrenals the thyroid is normal. At any rate their case suggests the possibility that the factor responsible for Riedel's struma may also attack other members of the endocrine glands.

A Case of Tetania Parathyreopriva Treated with Collip's Parathyroid Extract.—H. Lisser and H. C. Shepardson (*Endocrinology,* September-October, 1925) maintain that they were the first to treat a case of tetania parathyreopriva with Collip's hormone. A detailed account is given of the progress of the treatment, which was tentative at first in the absence of criteria as to doses under such circumstances. Diagnosis was established three weeks after operation for goitre on finding three normal parathyroid glands in the mass of excised tissue. Blood calcium estimations were constantly made, the amount fluctuating with the amount of hormone administered or with its withdrawal between 7.2 and 11.9 milligrams to the hundred cubic centimetres of blood. The patient continued the injection of the remedy after her discharge from the hospital, examining her own blood, much as does a diabetic patient with insulin.

Hypopituitarism and Diabetes.—In five cases of hypopituitary disease H. J. John (*Endocrinology,* September-October, 1925) found decreased carbohydrate tolerance, although no glycosuria was present in any instance. One case was definitely diabetes, one a mild type of diabetes, and three patients were in a prediabetic stage. All patients were obese.

Geographical Distribution of Epilepsy and Endemic Goitre in Switzerland.—V. M. Buscaino says (*Rivista di Patologia Nervosa e Mentale,* March-April, 1925) that in Italy, the United States, and Switzerland epileptics are especially numerous in regions where epidemic goitre prevails. In Italy and the United States they are numerous particularly near the seacoast. In other words, epilepsy is most frequent in all three countries in regions where the thyroid gland functions very actively or incompletely, or in localities abounding in iodine (brisk thyroid function at the seashore) or deficient but not exceedingly deficient in that element. These facts support the dysthyroid anaphylactic theory of epilepsy.

The Diagnostic Criteria of Chronic Parathyroid Insufficiency, With Special Reference to the Phosphate Content of the Blood.—Louis Berman (*American Journal of the Medical Sciences,* February, 1926) gives as the criteria which may be used in the diagnosis of chronic parathyroid insufficiency and in gauging the effect of treatment. 1, dystrophies of the hair, nails, teeth and skin; 2, mechanical hyperexcitability of the nerves; 3, electrical hyperirritability of the peripheral nerves; 4, dimished calcium content of the blood, negative calcium balance; 5, decreased phosphate content of the urine, phosphate retention in tissues increased phosphate content of the blood.

Prognosis in Exophthalmic Goitre.—J. Marion Read (*American Journal of the Medical Sciences,* February, 1926) says that acute cases of exophthalmic goitre with well defined onset offer a more favorable prognosis than those with insidious onset and long existing symptoms. The height of the metabolic rate offers only slight assistance in estimating the prognosis. Males seem to be more resistant to treatment and are more apt to become chronic sufferers than females. Subtotal thyroidectomy nearly always produces a remission of the disease if the patient survives the operation, but it does not constitute a cure.

Heterotopia of Adrenal in Liver and Kidney.—Carl Vernon Weller (*American Journal of the Medical Sciences,* May, 1925) understands by heterotopia of the adrenal in liver and kidney the developmental inclusion of the adrenal in or beneath the capsule of one of these organs. Inflammatory adhesions and the lesser aberrant adrenal masses are not included in this definition. Duplication of the adrenal may be present.

Of adrenal renal heterotopia one new case is added. This condition occurs chiefly in males and is usually bilateral.

Three new cases of adrenal hepatic heterotopia are added. Although presumably the more common of the two, this has received but little mention in the literature.

Adrenal heterotopia is usually associated with a persistent thymus and other evidences of the thymicolympathic constitution, and frequently with the asthenic habitus. It is an

evidence of constitutional pathology. Two patients in the thirteen cases reported died of diabetes. In accord with what is known of this constitution, in most cases of adrenal heterotopia the patients have died at a relatively early age. The incidence of tuberculosis and other infections is high.

In adrenal renal heterotopia the surgeon will inevitably remove the adrenal in doing a nephrectomy unless special precautions are taken. Due to the medullar hypoplasia usually present and the bilateral nature of this condition, it may be especially important that the heterotopic adrenal should not be removed.

Relation of Thyroid Secretion to Specific Dynamic Action.—Emil J. Baumann and Louise Hunt (*Journal of Biological Chemistry,* July, 1925) states that complete thyroidectomy caused a gradual decrease and final disappearance of specific dynamic action after about sixty-five days. Restoration of this action which had completely disappeared following thyroid removal was accomplished by feeding thyroid gland. Incomplete thyroidectomy caused a decrease of specific dynamic action, which would be increased again by feeding thyroid and in some cases of feeding a small amount of potassium iodide.

A Pure Strain of Thyroid Cells and Its Characteristics.—Albert H. Ebeling (*Journal of Experimental Medicine,* March, 1925) describes in full the technic used in the isolation and maintenance of a strain of thyroid cell, and the cultural properties of the thyroid cells. Their multiplication *in vitro* was observed for seven months, and it was as active at the end of this time as at the beginning, and the cells had retained their individual characteristics. Embryonic tissue juice must be present in the culture medium for indefinite multiplication. The thyroid cells grow at the surface of the coagulum as pavement epithelium, and within the coagulum as a glandular structure. The cells did not dedifferentiate, and the lumen of the acini in cultures from a strain over four months old contained colloid secretion similar morphologically to that from a freshly extirpated thyroid gland. The study of the endocrine glands by the method of tissue culture thus appears to be practicable.

BLOOD AND LYMPH GLANDS

Sickle Cell Anemia.—Earl Z. Browne (*Medical Clinics of North America,* January, 1926) states that sickle cell anemia is probably a familial and hereditary defect of the spleen and the blood forming organs, with a resulting change in erythrocytes which predisposes to hemolysis and phagocytosis. The anemia is the result of excessive blood destruction, activated by factors that would be innocuous in a normal person. The increased indirect van den Bergh reading that is present supports this view of a hemolytic process. In histological studies the spleen appears packed with red blood cells, more in the spaces of the pulp than in the sinuses. Fibrosis is also present and large focal deposits of iron free pigment. The elastic tissues of many of the splenic arterioles give the iron reaction. Pigment is also present in excess in the liver, both in the hepatic and Kupfer cells, and can always be found in the endothelium of the capillaries of various organs; in the collecting tubules of the kidneys and in the glomeruli as well. The destruction of red blood cells is most pronounced in the spleen. No iron pigment is found in the bone marrow. Just what the toxin is we do not know.

The treatment of these cases, as of the primary anemias in general, is notoriously unsatisfactory. Various remedies have been tried, mainly iron and arsenical preparations, rest in bed, plenty of fresh air and sunshine, and frequent small transfusions of blood, the latter being of more use than anything else tried.

The outlook is bad, the course being gradually a downward one, and the curtain is generally rung down by an intercurrent disease. It has been stated that these patients rarely live beyond the age of thirty years.

Difficulties in the Diagnosis of Leucemia.—G. Lovell Gulland (*British Medical Journal,* July 18, 1925) regards leucemia as "a sarcoma of the leucocytes." The assumption of a sarcomatosis, however, does not settle the question, as the problem is bound up with the question of what influence it is which in health keeps the normal number of leucocytes in the blood within such narrow limits. We know that the action of parasites (bacterial and other organisms) can powerfully alter the count in disease in both positive and negative directions, that the proteins of food and probably other proteins and many other substances have definite actions. Does the interaction of an infinite variety of substances keep the balance in health, and, if so, does it act directly on the bone marrow and the blood, or through the medium of some other organ? These questions require a definite answer before we shall progress much further in the understanding of leucocyte problems.

It is very striking when one examines the marrow of a myeloblastemic patient who has died with a count of, say, 20,000, to find all the tissues packed with myeloblasts, to the practical exclusion of every other type of cell. The wonder is, not that the leucocyte count is increased, but that it is not vastly higher. One cannot resist the feeling that the excess of cells in the blood is there rather as an overflow than in a response to any active call upon the marrow cells. Obviously the condition is widely present in the marrow before there is any evidence in the blood of its existence. A leucocytosis responding to an organismal infection occurs practically at once, and the marrow gets under way immediately, but never goes beyond the amount of hypertrophy required in each special instance. A leucemia progresses in the marrow more or less steadily, in the acute cases progressively till death occurs. We do not know whether the spontaneous remissions which sometimes occur in the blood picture of the chronic leucemias correspond to a real alteration in the condition of the marrow; if they do they are not more frequent than the retrogressive changes that occur in some tumors. It is well to keep an open mind, but until further research throws fresh light on the disease the neoplastic theory of its causation is the most logical and satisfying explanation.

Clinical Value of the Van den Bergh Reaction for Bilirubin in the Blood.—J. W. McNee and Chester S. Keefer (*British Medical Journal,* July 11, 1925) assert that the Van den Bergh reaction is the best method so far available for the clinical investigation of the bilirubin content of blood serum or plasma. It has numerous advantages over other tests which have subsequently been proposed; 1, its extreme delicacy; 2, it is not given by other yellow substances which may color the plasma; 3, it gives important qualitative distinctions between certain forms of icterus; 4, it can now be used for a satisfactory quantitative estimation of bilirubin.

The qualitative reaction may enable a postitive diagnosis of obstructive or of hemolytic jaundice to be made. Pernicious anemia, except in the stage of rapid temporary improvement, can be distinguished from secondary anemias. In some diseases (for example, catarrhal jaundice, subacute liver atrophy, cardiac failure) the reaction may pass through all the stages from completely delayed to prompt direct, as the disease progresses. As a rule, however, in the commonest type of jaundice (the toxic and infective hepatic group) no information of any diagnostic or prognostic value is given to the clinician. The test, however, is of great practical value for the detection of socalled latent jaundice.

Blood Transfusion.—A. O. Bryan (*New Orleans Medical and Surgical Journal,* December, 1925) maintains that there should be no reason for a patient's dying of acute hemorrhage for lack of blood. Each donor should correspond in group with the recipient, and in addition should be cross agglutinated just before transfusion. Citrated blood is contraindicated in cases of lengthened coagulation time and low platelet counts. There are very few severe reactions from transfusion in secondary anemias, and one gets greater success in these. In primary anemias transfusion should be given as often as five days and in small amounts, in order to prevent a fall in the hemoglobin curve, and after the hemoglobin has been raised to eighty per cent. this should be maintained by injection of whole blood subcutaneously. He also asserts that blood transfusion is a specific for purpura hemorrhagica.

Transfusions of Plethoric Blood in Pernicious Anemia. P. Emile-Weil and R. Stieffel (*Bulletins et mémories de la Société médicale des hôpitaux de Paris,* November 26, 1925) state that in pernicious anemia transfusion acts not only by replacing plasma and red cells but, in particular, as a powerful stimulant to the hematopoietic organs. Out of twelve cases treated with ordinary blood three were cured, six showed prolonged improvement and three were uninfluenced. The reasons for the failure in the latter had been thought to lie in some serious organic disorder, such as neoplasm, or in a complete annihilation of the hematopoietic organs which precluded restoration of their function. Experience with a recent case, however, showed that the difficulty may consist in the use of an unsuitable type of blood for the

transfusion. In a woman of fifty years, anemic since childhood, and with one million red cells and twenty-five per cent. of hemoglobin, four transfusions of ordinary blood in the course of six weeks caused only a slight, transient improvement, the condition being worse after the fourth transfusion than at the start, whereas four transfusions of blood from an obese plethoric, cyanotic woman with six million red cells and one hundred and ten per cent. of hemoglobin increased the patient's cell in six weeks to two million and eight hundred thousand and the hemoglobin to fifty-five per cent., with improved general condition and appetite. The greater benefit from plethoric blood is not due to the larger number of erythrocytes injected, but to the fact that such blood contains active hematopoietic substances. In rabbits the authors noted a far greater cell response after injection of plethoric than after normal blood. The manner in which plethorics react to bleeding shows plainly that their blood possesses tremendous reparative power. The plethoric donor in question, although bled ten times in three months to a total of three and one half to four litres of blood, showed little change in the red cell count.

Effect of Röntgen Ray Irradiation on Red Blood Cell Production in Cancer and Leucemia.—Raphael Isaacs (*American Journal of the Medical Sciences,* January, 1926) presents the following conclusions: Irradiation stimulates in susceptible cases changes which are normal in the life of a red blood corpuscle, the rate and time of initiation only being changed. Effective short wave röntgen ray irradiation over any part of the body in man may be followed, in from one to twenty-four hours, by one of three responses of the young red blood cells. The granule red cells may show an appreciable and sustained increase in percentage, or the increase may be transient, or it may be negligible. Cases of cancer and leucemia in which the increase of granule red corpuscles after irradiation is significant and sustained for two or more days show a definite clinical improvement and no leucopenia develops. When there is no such increase, there is usually no clinical improvement. When the increase is for twenty-four hours or less and followed by an abrupt decrease, the results are those of too much irradiation, a leucopenia develops, and the patient may become worse clinically. The most frequent effect on the count is a gradual temporary decrease, with an increase in the color index. The change in the percentage of immature red corpuscles is one of orderly stimulation to reach maturity, follow therapeutic irradiation over any region of the body, and appear to be a systemic effect. The period between the irradiation and the beginning of maturation changes in the red blood cells is probably a matter of minutes, as compared with hours or days for the leucocytes and weeks for carcinoma tissue. All röntgen ray irradiation may be considered as stimulative. Small doses may stimulate to division, large ones to maturity and to death from senility.

Four Cases of Hemorrhagic Purpura with Splenectomy.—Herbert Z. Giffin (*Medical Clinics of North America,* January, 1925) reports both severe and mild types of hemorrhagic purpura. Splenectomy has been surprisingly effective in causing a disappearance of almost all of the features of the disease. The improvement following operation is just as prompt and much more spectacular than improvement following splenectomy for hemolytic jaundice.

It is necessary to differentiate hemorrhagic purpura from hemophilia, acute aplastic anemia, certain forms of acute leucemia with hemorrhagic manifestations, cases of multiple telangiectases with secondary bleedings, and a certain group of cases which might be termed familial epistaxis. Rarely a case is seen in which characteristics do not conform definitely either to hemophilia or to hemorrhagic purpura. In the differentiation of acute aplastic anemia with hemorrhagic manifestations and hemorrhagic purpura, the persistent leucopenia may be of very great importance. The reduced number of platelets, the long bleeding time, the absence of retractility of the clot, and the presence of petechiæ on the application of a tourniquet, are the features which will usually clearly differentiate hemorrhagic purpura from any of the other diseases mentioned. The absence of a family history of hemophilia and the absence of hemophilic joints are also of especial importance in the diagnosis.

The spleen was palpable at the time of operation in only two of these four patients. One of the spleens seemed to be considerably enlarged. It seems that in this disease the organ is filled with an abnormally large amount of blood.

The author's observations in general suggest that the average level of the platelet count is low before operation, with an occasional rise to normal, and that, on the other hand, the platelet level after operation is high, with an occasional drop below 100,000. There seems to be considerable evidence which indicates that platelet destruction may be a fundamental factor in the disease. The very rapid increase in the number of platelets following splenectomy, accompanied by the immediate cessation of hemorrhages, could best be explained by the immediate cessation of the excessive destruction of platelets.

Blood Transfusion: Its Dangers and Limited Value.—J. F. Baldwin, (*American Journal of the Medical Sciences,* July, 1925) reaches the following conclusions:

Transfusion is a procedure by no means free of dangers, some of which are absolutely unavoidable.

It is of no value in acute sepsis, but its use in that condition is particularly dangerous.

In chronic sepsis its value is only in improving the anemia when that has reached a more or less dangerous point.

It is of no use in burns except in chronic stages when the main condition is that of anemia.

It is of no ultimate value in pernicious anemia, but its use is attended with more or less hazard, so that it is questionable if the end results are of any real benefit.

Its chief value is in conditions of profound shock or acute anemia from hemorrhage, as in postpartum hemorrhage, ruptured ectopic pregnancy and so forth. Particularly is it of value when given immediately preceding or following some operative procedure in which acute hemorrhage forms an important factor.

It seems to have little or no value in shock unless that shock is the result of acute hemorrhage.

Its very great value in hemorrhages seen occasionally in newborn infants has apparently been conclusively established. It seems to be in such conditions unnecessary to type the mother's blood, which can be taken at once and the injection of a small amount into the vein of the infant, or preferably perhaps into the superior longitudinal sinus, may prove a lifesaving procedure.

Hemochromogen Crystal Test for Blood.—Douglas J. A. Kerr and Victor H. Mason (*British Medical Journal,* January 23, 1926) prefer Sutherland's method with the Takayama solution No. 2 for the production of the hemochromogen crystals in the blood. This solution consists of sodium hydroxide (ten per cent.) three c.c., pyridine three c.c., saturated solution of grape sugar three c.c., and distilled water seven c.c. The solution deteriorates after one or two months. On the addition of two or three drops of Takayama's solution to a small piece of the suspected material on a slide, in the cold, and covering with a coverglass, salmon pink crystals appear within one to six minutes, giving a very characteristic appearance under the low power of the microscope. At the same time, the color changes through greenish brown, dark red, to pink, indicating the formation of hemochromogen, and thus affording confirmation of the test. If only a minute portion of blood is available this is apt to vanish during any process of heating, and thus a method which can be carried out in the cold possesses a distinct advantage.

In the majority of cases, especially with fresh stains and if care be exercised, there is no difficulty in obtaining hemin crystals. This test has the following advantages:

1. Simplicity of technic, being obtained in the cold by simply adding the Takayama No. 2 solution.
2. If it is desired to heat the slide, there is no danger of overheating as there is in the case of hemin crystals.
3. The crystals are large, easily seen, and are of a very characteristic appearance and color.
4. The nature of the crystals may be confirmed by means of the spectroscope.

The Sugar Content of Blood.—Ben K. Harned (*Journal of Biological Chemistry,* October, 1925) reports a method of determining the sugar in the blood which closely agrees with that of Benedict's recent method. In Harned's procedure, the blood proteins are precipitated by a slight excess of acid mercuric nitrate. Excess of mercury and unoxidized nitrogen are removed from the filtrate by successive precipitation by sodium bicarbonate and hydrogen sulfide. The final filtrate is substituted for the tungstic acid filtrate in the Folin-Wu procedure. Glucose added to the blood is quantitatively recovered. The Folin-Wu values for blood sugar average from seventeen to twenty-five per cent. higher than those by the proposed procedure.

MEDICAL JOURNAL AND RECORD

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Medicolegal Notes.

RIGHT TO PHYSICAL EXAMINATION OF PLAINTIFF IN PERSONAL INJURY ACTION

The Connecticut Supreme Court of Errors holds, Cook v. Miller, 130 Atl. 571, that in an action for personal injuries an order of the trial court for an examination of the plaintiff's person is a proper exercise of its discretion. The court said: "The discretionary right to make such an order would seem to flow legitimately from the right of a defendant to call an injured plaintiff as a witness and compel his testimony as to his injuries, or to cross examine him relative thereto, if he testifies in his own behalf. While in a number of states this matter is one of statutory regulation in the states where no such regulation obtains the decided preponderance of authority favors the right of the trier in his discretion to make such an order."

AWARD SUSTAINED AGAINST MEDICAL EVIDENCE AS TO CAUSE OF GANGRENE

The New Jersey Supreme Court held, Curtis-Warner Construction Corp. v. Gorman, 130 Atl. 538, that evidence that a block of timber struck claimant on the foot; that, while the injury appeared trivial at first, it developed so that he had to go to the hospital; that he had pneumonia; that gangrene set in at the point of injury; and that he lost a portion of his foot, sustained an award of compensation, although there was medical testimony to the effect that the gangrene was not the result of the accident, but of the pneumonia.

ACCELERATION OF TUBERCULOSIS BY INJURY

In a workman's compensation case, where the claimant was suffering from tuberculosis following an injury caused by being squeezed by a heavy oaken door against the wall while the door was being moved, the employer contended that no causal connection had been shown between the alleged injury and the tuberculosis. The defendant produced two very distinguished medical specialists in tuberculosis. They testified hypothetically only. This testimony was that tuberculosis results from infection and never from traumatism. They did not deny, but impliedly admitted, that tuberculosis might be accelerated and lighted up by traumatic causes; but they also testified that the injury to this patient, as described in the hypothetical question, was not adequate to produce such acceleration. The Iowa Supreme Court, Fraze v. McClelland, 205 N. W., 737, held that the testimony of the specialists was entitled to great weight, and it was disposed, in the consideration of this case to assume as a fact that tuberculosis does not originate from traumatic causes. It was conceded by a medical witness for the plaintiff that the tuberculous infection of this patient must have occurred in his childhood. He gave as his opinion also that the injury to the plaintiff might have so devitalized the injured region in the chest as to stimulate or lighten up the tuberculous condition.

It was undisputed that immediately following the injury the plaintiff's weight decreased from about 165 or 170 pounds to 135 pounds, and that the development of his disability from that date was much more rapid than the normal progress of tuberculosis under ordinary conditions. In his opinion filed, the Industrial Commissioner cited decisions from the courts of last resort of three states, wherein it was found that acceleration of pulmonary tuberculosis had resulted from traumatic causes. Retmier v. Ceruse, 67 Ind. App. 192; State v. District Court, 138 Minn. 334; Lundy v. George Brown & Co., 93 N. J. Law 107.

The Iowa court was not disposed to establish or to contradict medical facts by judicial precedents, being of opinion that whatever the medical facts be, as proven in a particular case, they must control regardless of judicial precedent. But the records in the cited cases indicated that it was far from settled medically that traumatic causes may not greatly stimulate and accelerate the action of a dormant tuberculous affection; and such was the disclosure of the record in the present case. The court regarded the evidence as close on the question of causal effect, but thought also that the plaintiff's evidence was sufficiently preponderant to sustain the action of the Industrial Commissioner in allowing compensation.

MEMORANDUM OF SALE OF ARSENIC HELD INADMISSIBLE IN MURDER CASE

In a prosecution for murder by poisoning with arsenic the Illinois Supreme Court held, People v. Zalimas, 319 Ill. 186, 149 N. E. 759, that a druggist's memorandum of a sale of arsenic bearing the accused's name as the purchaser was not admissible as original evidence, but it was proper for the maker as a witness to use it to refresh his memory and, after doing so, to testify to such facts as he was then able to remember. He did so testify, but his memory did not enable him to recall the purchaser as the accused. He did not know the name of the purchaser, but inserted in the memorandum the name the unknown purchaser chose to give him. It was held error to admit the memorandum in evidence, and there was no evidence connecting the accused with the purchase of arsenic. It was also held that the fact that a wholesale drug store sold a retail drug store a pound of arsenic in August did not tend to prove that the retail drug store sold arsenic to the accused three months later in November. The only effect of this evidence was held to be to attach a fictitious importance to the sale by the wholesale company to the retailer, and its admission was held prejudicial error.

TAX FOR ERECTION AND UPKEEP OF HOSPITAL HELD AUTHORIZED

The Kansas Supreme Court holds, Atchison T. & S. F. Ry. Co. v. McPherson County Comrs., 241 Pac. 444, that section 1 of chapter 202 of the Laws of 1913 authorizes the board of county commissioners, after the hospital proposition provided for therein has been adopted by the voters of the county, to levy annually thereafter a tax of two mills on the dollar for the purchase of a site, for the erection of buildings and for the support of the hospital.

PUNCTURE BY TUBE IN TREATING HEMORRHOIDS HELD ACCIDENT

The Indiana Supreme Court holds, Hoosier Casualty Co. v. Royster, 149 N. E. 164, that death caused by an insured unintentionally puncturing his bowels by inserting a tube used for introducing medicine in treating hemorrhoids beyond the point intended occurred through external, violent and accidental means within the meaning of the policy sued upon.

FALSE REPRESENTATIONS AS TO HOSPITAL TREATMENT VOIDING INSURANCE POLICY

The New York Appellate Division holds, Grubiak v. John Hancock Mut. Life Ins. Co., 208 N. Y. Supp., 279, that since the adoption of section 58 of the New York Insurance Law, false representations by an insured in his application that he had never been treated in a hospital precluded recovery on the policy, although the agent who acted for the insurance company in soliciting the insurance and the doctor who examined the insured for the company were both aware of the true facts, and knew they were not stated in the application.

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Experimental Evidence of the Relation of Dental Infection to Systemic Disease*

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Few clinicians today doubt a close relation between systemic disturbances due to focal infection and chronic periapical dental disease. Results obtained clinically in some patients by the removal of the localized infections suggest an etiological relationship. In many instances, however, such definite evidence is lacking. This does not prove that the focal infection is not the cause of the systemic disease. Often the anatomical changes are such as to preclude a cure. Here, only a prevention of the recurrence of the symptoms or a stay in the progress of the disease is the most that one can hope for. Most of the laboratory procedures which have been employed in attempts to prove a causal relation of the focal lesion to distant disease have been found of little value. Complement fixation reactions, blood chemical changes, and morphological blood studies have all failed to give dependable findings.

Certainly the most convincing proof we have of the relation of a given focus to disease is the reproduction in animals with the organism recovered from the focus of the condition from which the patient suffers. Such proof depends upon the tendency of bacteria to localize in certain tissues of the body due to some peculiar inherent property. Rosenow, in many experiments, has shown that bacteria from chronic foci, if etiologically related, tend to reproduce in animals the lesions from which the patient suffers. Many other workers have not been so successful in demonstrating specific localization. I have been able to present confirmatory results in disease of the eye (1), the stomach (2), and the kidney (3), and in cases of onychia (4). Failures in the hands of other workers are evidently largely due to the fact that mediums providing gradient oxygen tension were not used in making the cultures and that the organisms were not transferred rapidly enough from the patient to the experimental animal.

The following case histories with the result of animal experiments are reported to illustrate the method of proof by animal experimentation. Details of the methods employed in obtaining the culture material and making the culture have been described in detail elsewhere (1). All cultures have been made in deep tubes of glucose brain media which provide all degrees of oxygen tension and preserve the specific affinity of the organisms. The animals have been inoculated intravenously with five c. c. of the original broth cultures of the infected material. The culture employed is never over and often less than twenty-four hours old. The animals have been autopsied routinely three to six days after the injection.

*From the Deaner Institute, Kansas City, Mo.

GASTRIC ULCER

CASE I.—History: E. W. C., aged thirty-two, complained of a severe gnawing pain in the abdomen, occurring from three to four hours after eating. The past history was unimportant. The physical examination was negative except for tenderness in the appendix region. The gastric analysis showed forty acidity per cent. of free hydrochloric acid, and fifty-seven acidity per cent. of total acid. The hemoglobin was eighty-five per cent., the red count 4,910,000, and the white count 12,200. The urine showed only a trace of albumin. The x ray findings were typical of ulcer. The clinical diagnosis was gastric ulcer. The dental radiographs showed three pulpless teeth, two of which showed no apical rarefaction.

Animal inoculations: From the extracted teeth a profuse growth of streptococci was obtained. A fourth tooth was removed for extensive pyorrhea. Eight rabbits were injected intravenously with the broth cultures. Four of the eight showed gross lesions in the stomach or duodenum (Fig. 2). Six of the animals showed also involvement of the joints; three had muscle lesions, two had kidney lesions, and one, a lesion in the heart muscle.

ACUTE MYOCARDITIS

CASE II.—History: D. M., a medical student, aged twenty-four, stated that he had had several acute attacks of rapid heart beginning at the age of twelve. There was no history of coincident infection at the onset. At the age of eighteen an attack occurred with an abscessed tooth. In May, 1925, he had an attack lasting several hours during which electrocardiograms were taken. These showed the tachycardia to be of a ventricular type (Fig. 3A). For several weeks before this attack he had had an infection around a partially erupted third molar tooth. A second electrocardiogram taken in June, 1925, showed

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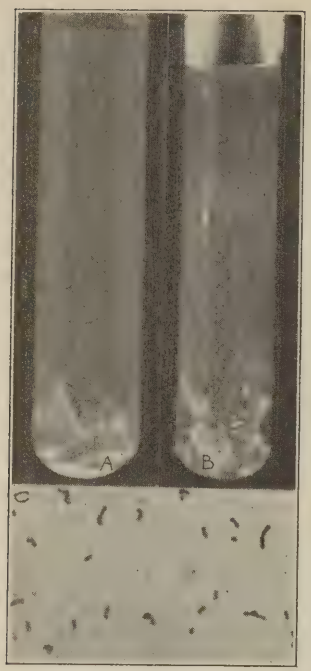

Fig. 1.—A, Culture from periapical dental infection in deep tube of glucose brain agar. Note the uniform growth throughout tube; B, culture similarly made from another tooth. This organism will not grow in the aerobic zone, as shown by the absence of colonies at the top of the agar column; C, typical short chain streptococcus from a periapical infection.

a normal heart rate but evidence of myocardial disease (Fig. 3B).

Animal inoculations: At this time the third molar tooth was removed, revealing a pocket of pus from which a pure culture of a streptococcus was obtained. Two rabbits were injected with this culture. One died forty-eight hours later. At autopsy there were numerous areas of hemorrhage in the heart muscle (Fig. 3D). The other animal was killed. This also had a smaller number of hemorrhages in the heart muscle.

Subsequent course: In October, 1925, the patient had another attack, during which he died. At autopsy the heart showed no gross lesions. Sections, however, showed areas of acute infection in the heart muscle (Fig. 3C).

RECURRENT IRITIS

Case II. — History: E. O. M., a clerk, aged fifty-two, had had the first attack of iritis in 1905 and the second in 1909. Following this he had had frequent attacks at intervals of about one year. During the past two years he had suffered from iritis almost continuously in a subacute form. The patient stated that the most severe attack he had ever had occurred while some dental work was being done. He had been confined to bed for four months in 1920 with rheumatism.

Fig. 5.—A, original culture tube from the lateral incisor indicated by arrow in B of patient suffering from duodenal ulcer (Case IV); B, dental radiograph of tooth from which the culture at left was grown; C, massive hemorrhage in duodenum of rabbit injected with a culture from the lower incisors.

An examination of the right eye, May 20, 1922, during a period of active infection, showed posterior synechiæ, plastic exudates in anterior chamber, and a small hemorrhage at the periphery of the iris. There was much pericorneal injection, deep and superficial. The intraocular pressure was normal. There was intense photophobia and lacrimation. The left eye showed no active infection but posterior synechiæ were present, indicating that there had been attacks of iritis in this eye also.

A physical examination, November 21, 1922, revealed a well compensated aortic insufficiency. The Wassermann test and urine examination were negative. A blood count showed 4,124,000 red cells, 8,350 white cells, and the following differential; polymorphonuclear neutrophiles, 68.2 per cent.; polymorphonuclear eosinophiles, 7.2 per cent; small mononuclears, 17.2 per cent.; large mononuclears 7.4 per cent. The dental radiograms revealed nine pulpless teeth only one of which, the lower left first bicuspid, showed a definite area of rarefaction.

Fig. 2.—Ulcer of stomach of rabbit following the injection of culture from teeth of patient (Case I) suffering from gastric ulcer.

Animal inoculations: The root tip of the lower left first bicuspid showed an infinity of colonies of a green producing streptococcus in the brain agar culture. The mixed broth cultures from this tooth and the upper left first bicuspid, however, produced no eye lesions in rabbits. The four upper incisors (Fig. 4B) were removed at one operation. The upper right lateral was sterile, even in broth, the left central and lateral showed Streptococcus salivarius, and the right central, Streptococcus fecalis.

Two rabbits inoculated with the mixed cultures manifested a marked iritis (Fig. 4A and C). At necropsy one showed cloudy fluid in the joints with an abscess of the kidney; the other no lesions except that of the eyes. The upper and lower right second molars showed a profuse growth of staphylococci and streptococci. Two rabbits inoculated with the mixed cultures showed marked bilateral circumcorneal injection with a purulent arthritis and abscess in the kidney, voluntary muscle and heart.

DUODENAL ULCER

Case IV.—History: J. J. W., a plumber, aged thirty-two, gave a typical history of recurring attacks of duodenal ulcer over a period of six years. The present attack had begun five weeks before he was first seen and had been unusually severe. He was in a good state of nutrition. The tonsils were small and no pus could be expressed. The heart sounds were clear, the pulse 80/100 and the blood pressure 140/100. There was tenderness in the epigastrium. The radiograms of the teeth showed a large area of bone resorption around the lower right and left lateral incisors (Fig. 5B). On culture there was a profuse growth of streptococci which would not grow to the top of the culture tube (Fig. 5A). There was also an area of questionable infection at the site of extraction of another tooth. Following the extraction of the teeth the symptoms were relieved.

Animal inoculations: Two rabbits were injected with the mixed cultures from the two incisor teeth. Both were killed the following day. One showed a

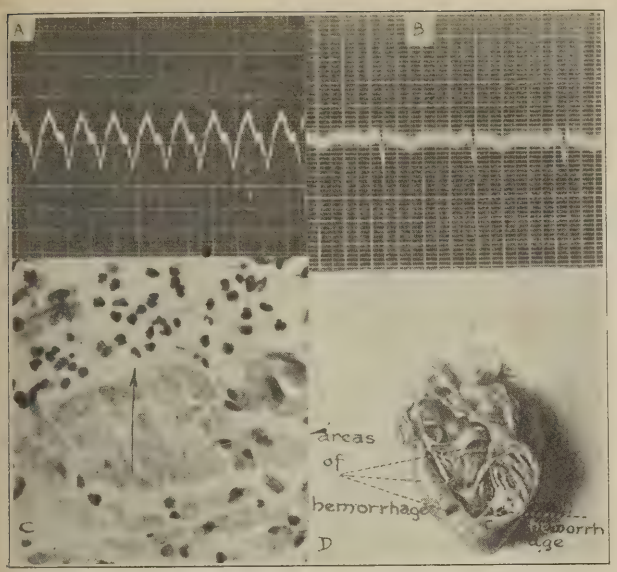

FIG. 3.—A, Electrocardiogram of patient (Case II) taken during an attack of paroxysmal tachycardia; B, electrocardiogram of same patient taken one month after attack. Note the evidence of myocardial disturbance as shown by the inverted T-wave and abnormal Q R S interval in lead I; C, photomicrograph of patient's heart muscle obtained at autopsy; note the areas of polymorphonuclear infiltration; D, heart of rabbit injected with streptococcus from an infected abscess around a partially erupted third molar tooth of the patient.

massive hemorrhage in the duodenal bulb (Fig. 5C) with no lesions elsewhere. The other showed one

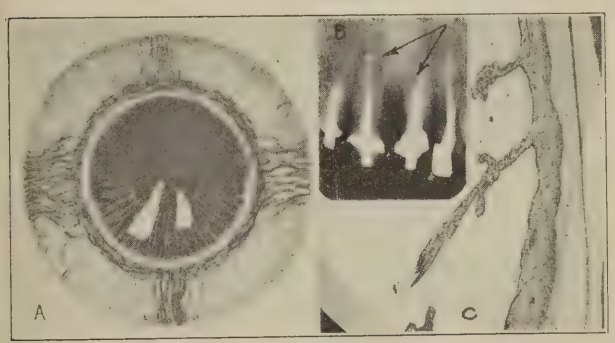

FIG. 4.—B, Upper incisors of patient (Case III) suffering from recurring attacks of iritis; A, eye of rabbit injected with the cultures from the incisor teeth shown in radiograph at left; C, photomicrograph of eye shown in A. Note the injection of iris and ciliary body.

moderate sized hemorrhage in the first third of the duodenum and a slight purulent arthritis.

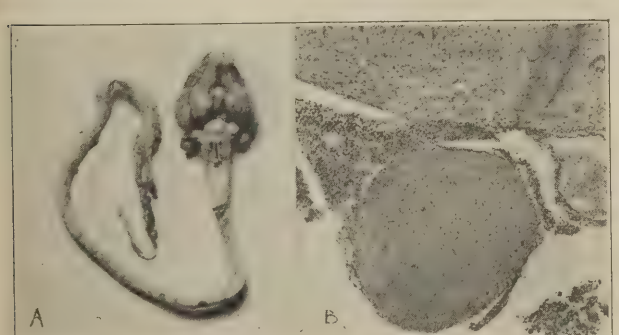

FIG. 8.—A, brain and spinal cord of rabbit injected with cultures from the teeth of a patient suffering from acute facial paralysis. There is marked injection of the base of the brain and injection and hemorrhage in the condal end of cord; B, photomicrograph of one of the cranial nerves at the base of the brain shown in A. Note the exudate at the base of brain partly encircling the nerve.

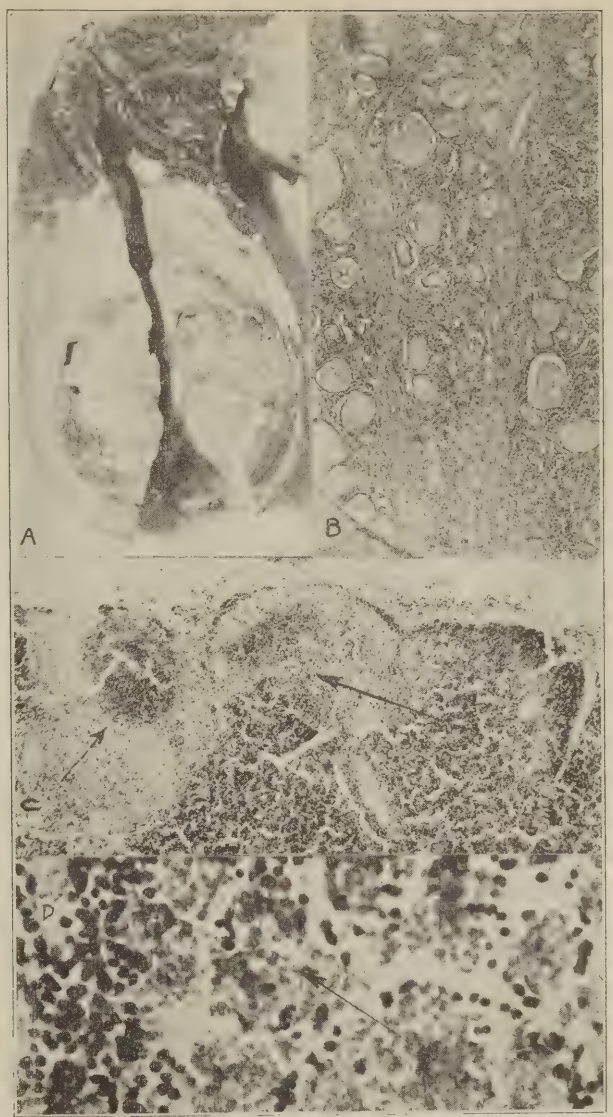

FIG. 7.—A, thyroid gland of patient suffering from ligneous thyroiditis; B, photomicrograph of section from gland; note the marked fibrosis; C, lymph gland adjacent to thyroid of rabbit injected with cultures from teeth of patient; note the necrosis and inflammatory reaction; D, photomicrograph at higher magnification of same section.

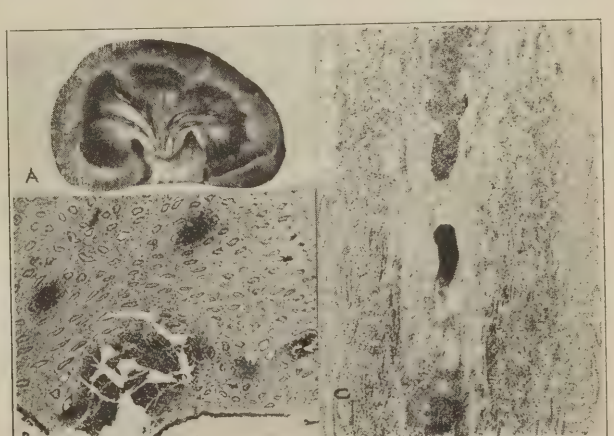

FIG. 6.—Kidney of rabbit injected with cultures from teeth of patient (Case V) suffering from pyelonephritis. A, gross specimen showing abscesses in the medulla; B, low power photomicrograph showing abscesses one of which is breaking through into the pelvis; C, photomicrograph through a lesion in the kidney medulla showing the necrosis and polymorphonuclear infiltration.

CHRONIC PYELONEPHRITIS

Case V.—History: M. I., a housewife, aged forty-five, had had frequent attacks of tonsillitis and quinsy before a tonsillectomy was done in May, 1922. She had had pyuria for twenty years and had been given pelvic lavage in 1915 without improvement. When first seen in January, 1923, she had been confined to bed for several months with myocarditis. Recently she had had an attack of acute arthritis involving several of the larger joints.

The physical examination was negative except for evident myocarditis. The blood count showed 4,000,000 red cells, 10,500 white cells and the following differential: polymorphonuclear neutrophiles, 59.6 per cent.; eosinophiles, 3.2 per cent.; basophiles, 0.6 per cent.; lymphocytes, 32.2 per cent., and large mononuclears, 4.4 per cent. The urine contained a very large amount of pus, a moderate amount of albumin, but no red cells or casts. The radiograms showed four pulpless teeth, only one of which had an area of apical rarefaction.

Animal inoculations: The pulpless teeth were extracted. Green producing streptococci were recovered from all of them. Four rabbits were injected with cultures. All showed at autopsy multiple abscesses (Fig. 6) in kidney medulla. All had purulent fluid in joints and five showed muscle lesions.

This patient was seen again nine months later. The heart and joint symptoms had disappeared. The urine contained only a small amount of pus.

SUBACUTE THYROIDITIS

Case VI.—History: M. A. M., a housewife, aged thirty-eight, complained of a cough, dyspnea, a painful swelling of the neck, nervousness and loss of weight. She had always been well before the present trouble. Her present illness had begun four months before admission with a swelling of the neck followed by symptoms of pressure on the trachea. She had difficulty in breathing and had lost thirty pounds.

On examination the patient was nervous, had inspiratory dyspnea, marked dental infection and diseased tonsils. There was swelling with marked induration of the tissue of the neck on both sides in the region of the thyroid. The swelling was tender and of woody hardness. There was a slight tremor of the hands. There was no anemia, the white blood count was 14,200, the Wassermann test was negative. The basal metabolic rate was twenty-six per cent. She had a slight daily rise in temperature. The radiograms showed the trachea deflected to the left and compressed. There were eleven pulpless teeth and marked pyorrhea.

Her condition grew steadily worse until operation was required to relieve the tracheal stenosis. A mass of tissue including the right lobe of the thyroid about the size of a hen's egg was removed. It was hard and cut with increased resistance (Fig. 6A). The cut surface showed hyaline fibrous tissue, round cell infiltration and areas of chronic inflammatory reaction in which there were nests of thyroid follicles (Fig. 6B). A diagnosis of chronic thyroiditis with extensive fibrous encapsulation was made.

The removal of the thyroid gave immediate relief but the symptoms returned several weeks later and necessitated a tracheotomy.

Animal inoculations: On June 30th, three pulpless teeth were extracted. A green producing streptococcus and a staphylococcus were recovered from all. Two rabbits were injected. At autopsy lesions in the muscle joints and kidney were found but no lesions in the thyroid or thymus. Three days later four other teeth were extracted. All showed a profuse growth of staphylococci and streptococci. One of the rabbits injected died within a few hours. There were numerous hemorrhages in the thymus and thyroid. The lymph glands adjacent to the thyroid were swollen and hemorrhagic. The following day the second rabbit injected was killed. There were marked pericorneal injection and numerous hemorrhages in the thymus. The lymph glands around the thyroid showed extreme edema, many hemorrhages and beginning necrosis. Another rabbit was injected with the same culture and killed the following day. The lump gland around the thyroid showed only a few hemorrhages. There were no other lesions.

Following the extraction of the first group of teeth which produced no special lesions in animals there was no reaction on the part of the patient. The reaction following the extraction of the teeth, the cultures of which produced specific lesions suggestive of those from which the patient was suffering, was severe. The temperature went up, the patient became excited and continued so for several days.

Following this reaction there was a gradual improvement in the symptoms. Two months later she had gained fifteen pounds in weight. The temperature and pulse were normal. The swelling of the neck completely disappeared and the induration of the tissues had almost disappeared. A year later there had been no return of active symptoms, but a permanent paralysis of the laryngeal nerve existed.

ACUTE FACIAL PARALYSIS

Case VII.—History: L. M. H., a plumber, aged thirty-nine, complained of facial paralysis. One year previously he had suffered from dizzy spells, and on examination was found to have albumin in the urine. The facial paralysis had appeared suddenly five days before without any pain. The right side of the face was found to be completely paralyzed. No other cranial nerves were involved. The blood pressure was: systolic, 130; diastolic, 85. There was no anemia. The dental röntgenograms showed four pulpless teeth, all presenting evidence of periapical infection.

Animal inoculations: Three rabbits were injected with the mixed cultures from the four extracted teeth In one a paralysis of the hind legs developed forty-eight hours after injection and was killed. At necropsy all organs were negative except the brain and spinal cord, which showed marked injection, some exudate at the base of the brain (Fig. 8) and hemorrhage in the caudal end of the cord. The second rabbit showed no symptoms at any time, and, at necropsy, only some vegetations on the heart valves were found. The third rabbit, two days after injection, had paralysis of the left ear and a pericorneal injection, which gradually cleared up. When the animal was killed, the only lesions found were a purulent arthritis.

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The Placing of Thoracoplastic Cases in General Surgical Wards and Their Medical Care Thereafter*

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New York

(*Concluded from page* 718)

Since, according to the foregoing report,[1] we have the right and privilege to place patients suitable for thoracoplasty in the surgical wards of general hospitals, may we now see what can be done from a medical point of view to give these patients the best possible care in cooperation with our surgical colleagues. To this end let us start with the presumption that the most careful attention has been given to the patient prior to his thoracoplastic operation and that his resistance has been increased as much as possible, so that both physically and mentally he is prepared for the surgical shock. This shock is, of course, greatly minimized by the use of local instead of general anesthesia, and by the graded operation.

There is nearly always danger that a patient may vomit during the anesthesia and that the aspiration of food particles may result in an aspiration pneumonia. As a preoperative precaution, therefore, the surgeon as well as the anesthetist should make sure that the patient's stomach is virtually empty, and in doubtful cases it may even be advisable to resort to lavage of the stomach prior to the beginning of anesthesia. The anesthetist should see that the foot end of the operating table can easily be elevated so that when he notices any diaphragmatic contraction during anesthesia, indicating the possibility of the patient's vomiting, he should immediately raise the lower portion of the body and thus facilitate the expulsion of the stomach contents.

I am opposed to ether anesthesia for all kinds of tuberculous patients, and particularly in operations involving the abdominal or thoracic cavities or the upper respiratory or digestive tract. All operations in these regions should be preceded by a thorough cleansing of the nasal and buccal cavities. One can never be sure of the type of pneumococci the patient may be harboring in his mouth, nose, and throat. During the recent war it was my privilege to publish, by authority of the Surgeon General, an article entitled Pneumonia Among Soldiers in Camps, Cantonments, and at the Front. As a means of disinfecting the upper respiratory and digestive tracts and perhaps killing the virulent types of pneumococci, I suggested the following solution which had been recommended by Kolmer and Steinfield (2):

	gm. or c.c.
Ethylhydrocuprein hydrochloride or quinin bisulphate	0.005
Liquor thymolis	5.0
Distilled water, sufficient to make	50.0

Before the final cleansing of these regions with the solution indicated, an important measure against the aspiration of infected material from bronchial secretions or cavities consists in urging the patient to repeat his usual morning pulmonary toilet once more an hour before the operation. Nearly all tuberculous patients cough more freely in the morning and expel profusely the secretions accumulated over night.

Let us for a moment consider the symptoms which may arise after the operation and which should be treated or rather anticipated by the surgeon in attendance, if this has not already been done by the medical attendant prior to the patient's transference to the surgical service. It is presumed, of course, that the patient's resistance has been built up and his general physical and mental condition prepared for the surgical procedure. I question the wisdom of telling the patient that because he will be given local anesthesia he will feel no pain at all during the operation. I would rather tell him it may hurt some, but assure him that with a little courage he will be able to stand the pain. It is always surprising to see how much a soothing word from a gentle voiced physician or nurse helps the patient to bear the pain which is often inevitable with local anesthesia.

The patient's condition should be an index to the number of ribs to be dissected at one seance. Although the patient may be asked how he feels and whether he could stand the removal of another rib, his own feeling, influenced by the administration of the opiate preceding the operation and the local anesthesia, may lead him to think that he can well stand the prolongation. However, his pulse, the character of his respiration, and his general aspect should be the decisive factors. I believe no harm has ever been done by making the graded operation even more graded than originally intended.

The most distressing symptom from which the majority of tuberculous patients suffer is cough, and it becomes especially troublesome and painful when the secretions are tenacious. I know of no better way to overcome this than to administer to the patient as large a quantity of chloride of sodium as he can take with his food, and begin with this several days before his operation. His desire to drink water is naturally increased and unless the patient has diarrhea, only good can come from this. While I do not pretend to be able to explain exactly why this increased amount of salt should help so materially in lessening the tenacious quality of the sputum, we may perhaps presume that it is effected by the process of osmosis. Be this as it may, I know from experience that it is as good a dietetic remedy as we have to ease the cough and to facilitate the ejection of the sputum.

Very varied indeed is the experience with cough after the completion of thoracoplastic operations. I have asked quite a number of surgeons to be good enough to answer the following question: "Does the average tuberculous patient, after having been submitted to a graded thoracoplastic operation, cough

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more or does he cough less, and is the quantity of sputum increased or diminished?"

In the experience of Archibald, Graham, Green, Keller, Lambert, Lilienthal, and Whittemore there is a diminution of cough and sputum immediately after the thoracoplastic operation. On the other hand, Meyer, Ramsdell, Torek, and Wells have found that

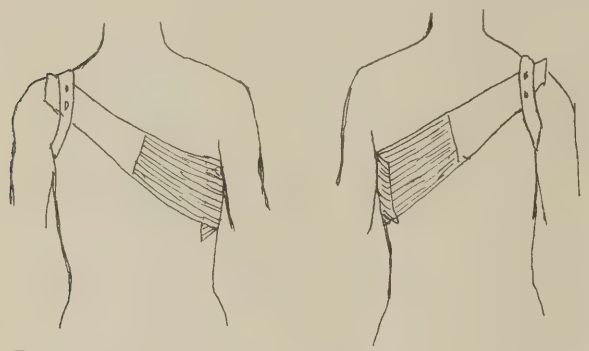

Fig. 1.—Edison's adhesive strap for compression of upper portion of lung; front and back views.

cough and sputum are increased in the first few days or a week after the operation and later gradually diminished.

After an operation on the chest, cough is just as painful and distressing as it is after an abdominal or pelvic operation, perhaps even more so, and whatever can be done to diminish its frequency without suppressing the secretion will be of advantage and hasten the patient's recovery. However, it must be borne in mind that for several days immediately following the operation, it is of the greatest importance in the prevention of aspiration or statis pneumonia to urge the patient not to suppress the cough with expectoration, in fact to let him do this as often as he can, to get rid of infectious secretions. By supporting the operated side with his hand or having the nurse do this, when the patient expects to cough, the pain and effort will be materially lessened.

It is, of course, presumed that most patients coming to thoracoplasty have learned to discipline their cough and to cough only if they feel they must expectorate. Nevertheless, it may be well to impress upon the patient again that the useless cough, that is, the cough without expectoration, can be avoided by will power. This will power, however, may not be as strong as it was before the operation and it sometimes becomes necessary, for a short period of time, to administer some cough remedy. I know of no better medicinal agent than small doses of heroine. I am in the habit of giving one twelfth of a grain of heroine every four or six hours and decreasing the frequency as the cough subsides. I have found the following a very pleasant mixture to administer this narcotic:

		gm. or c.c.	
Heroinae hydrochlor	gr. ij;		130
Acid. sulphuric. dil. .....m	xlv;	3	
Glycerinae	ʒj;	32	
Aq. laurocerasi, }		{ 16	
Syrup. pruni virg. } āā.....	ʒiv;	{ 16	
Aquæ distillatæ .....q. s. ad.	ʒiij.	90	

M. Sig.: One teaspoonful every 4 to 6 hours; take less as cough subsides.

To avoid any possible addiction to the use of heroine, as soon as the cough begins to lessen I alternate the heroine mixture with one wherein the active principle is codeine in doses of one eighth of a grain. For great mental distress or apprehension and for physical pain likely to follow the operation, I believe it is customary for surgeons to administer a fairly good sized dose of morphine hypodermically. It may be necessary to repeat this a few times after the operation.

The complication which is most feared after a thoracoplastic operation is of course the aspiration pneumonia in the healthy or relatively little invaded apex. We have already indicated the measures to be taken to avoid aspiration of food particles during anesthesia. To avoid the aspiration of infectious material coming from diseased bronchi or pulmonary cavities I know of no better means than to restrict the respiratory movements in that region. This may be done by strong adhesive straps after the method devised by Edison (Fig. 1). The old fashioned adhesive plaster may be advantageously replaced by the elasticon, suggested by Dr. Lilienthal and manufactured by Johnson & Johnson of New Brunswick, N. J. This is not irritating and will be borne better by the patient than even the best old fashioned adhesive straps.

Partial immobilization may also be obtained by a plaster of Paris short jacket, as devised by Forster of Colorado Springs (Fig. 2). This latter permits the compression of the apex or the upper lobe in part or entirely with the aid of inflatable rubber bulbs; Sewall's belt (Fig. 3) may also serve, or my own saddle bag (Fig. 4), which can be made in any size. It consists of a weighted band placed across the opposite side of the chest when the patient is in the recumbent position. By putting sand or shot in the container, the weight of the bag can be regulated and it should be placed so as to straddle the nonoperated side and thus inhibit respiration. To retain it in place bands can be attached and tied. The patient should also, of course, be cautioned to avoid deep respiration as far as possible.

Dr. David A. Stewart of the Manitoba Sanatorium

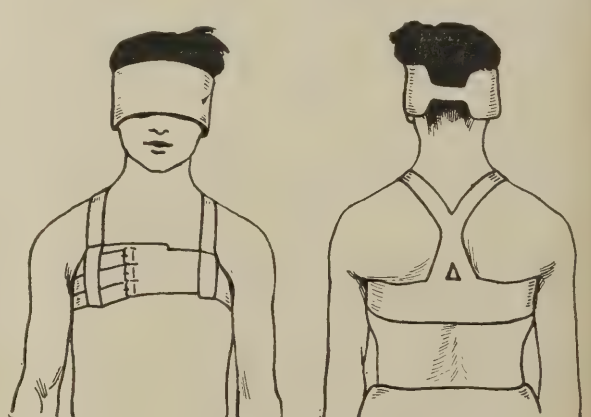

Fig. 3.—Sewall's belt; anterior and posterior views.

has also devised an interesting mechanism whereby he secures partial immobilization and in some cases also a small measure of collapse (Fig. 5). In the prevention of aspiration pneumonia it is of great advantage if for some time before the operation the patient has been taught to use only diaphragmatic respiration, which will be commented on later.

On rare occasions there may be a postoperative rise of temperature, a condition which should of course not be treated by heart depressing remedies, but by aerotherapy and hydrotherapy. It may not be possible to carry out the former as thoroughly with a patient in a general hospital ward as in a private room or sanatorium, but it is presumed that our mod-

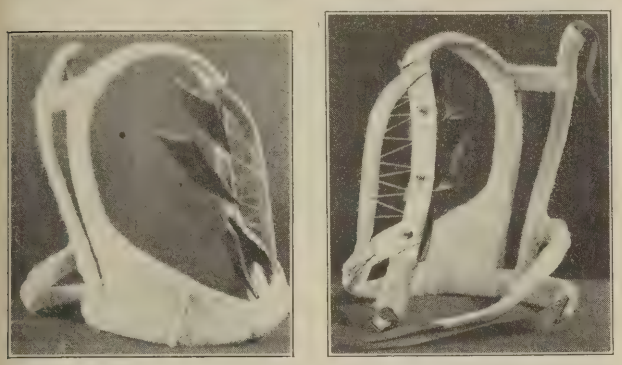

FIG. 2.—Forster's plaster of Paris jacket for restricting respiratory movements.

ern surgical wards are well ventilated and if the patient's bed is surrounded by a cubicle or screen, the window in his cubicle may be opened wider to supply his need for air. I do not believe, however, that the patient who has been operated on should be made uncomfortable in midwinter on account of outside low temperature; extremes should be avoided. He should never be exposed to the danger of being chilled. His body should be kept warm while he breathes fresh air.

If there is an appreciable rise of temperature, it may be well to resort to hydrotherapy by sponging the arms and legs with water at a temperature of from 85 to 90° F., or lower if the patient does not object, every two to four hours. The upper and lower extremities and perhaps also the abdomen should be wrapped in a Turkish towel and the water be allowed to absorb. The thorax should not be disturbed. In this way aerotherapy and hydrotherapy may be judiciously administered while the patient is still in the surgical division of the hospital.

We next come to the period when the patient is discharged as surgically healed, his right or left lung completely collapsed. Thanks to the compression of the diseased lung tissue, he has become virtually afebrile with his cough and secretions considerably diminished. However, the fact remains that probably no patient has ever come to thoracoplasty who has had an absolutely unilateral lesion, for the patients ready to have their lungs compressed are, as a rule, in the third stage of the disease, that is to say, there is extensive localized infiltration or consolidation in one or more lobes or disseminated areas of cavity formation, and when a case has advanced to this stage there is usually an apecial invasion of the other less affected side. In the many years of my service at the New York Health Department's Riverside Hospital for the consumptive poor, where we take only the advanced cases, I do not remember a single absolutely unilateral case. One side may be very little involved, but I repeat that when the patient has reached the stage just described, we can not hope to find an absolutely unilateral condition.

To protect the patient who has one side totally collapsed but has a beginning invasion of the opposite side is the most important thing after thoracoplasty. All our armamentarium—aerotherapy, climatotherapy, mechanotherapy, respiratory therapy, massotherapy, hydrotherapy, heliotherapy, and even psychotherapy—must be utilized to prevent the still existing tuberculous lesion from advancing further, and if at all possible to bring about a complete arrest. To this end the patient should live twenty-four hours out of every twenty-four in air as fresh and pure as is obtainable. The ways in which this can be accomplished will of course vary with the circumstances and the climatic conditions, for no one ideal climate exists; some patients will feel best in cool, some in warmer climates. Those inclined to dry catarrhal conditions will do well in moderately moist climates, those with moist catarrhs in hot dry climates. Where the individual patient can live outdoors the greatest number of hours of the day and the greatest number of days of the year in fresh, pure air with the greatest comfort, there is his ideal climate. Patients in poorer circumstances, as a rule, can not obtain those ideal conditions and they must be content with their home climate. They may, however, seek environments where the air is relatively free from dust and other impurities and obtain as much sunlight as possible.

Of the value of mechanotherapy we have already spoken, and I may say here that even after the patient's recovery from the effect of the operation and aspiration pneumonia is no longer feared, the various appliances described in the preceding pages as useful for the prevention of aspiration pneumonia may be employed continually to restrict as far as possible the respiratory movements in those portions of the lungs invaded by the tubercle bacilli. I often recommend and use these appliances for the restriction of respiratory movements in pulmonary tuberculosis when neither artificial pneumothorax, section of the phrenic nerve, nor thoracoplasty are indicated or possible.

It may seem surprising when I state that in addition to thoracoplasty on one side, the respiratory movements of the remaining portion of the lung can be restricted to the diaphragm and reduced in number. The *modus operandi* for this is the same as that which I devised for controlled diaphragmatic respiration when only the apices or upper portions of the lungs, on one or on both sides, are involved.

FIG. 5.—Stewart's mechanism for securing partial immobilization and a small measure of collapse.

I will give a short description of this method as follows: When being taught the practice of controlled diaphragmatic breathing, it is best for the patient to lie in or on the bed or on a reclining chair, in a semireclining position, with feet extended and slightly separated, which position demands the least cardiac effort against gravity. This position can be obtained in bed by the use of three or four pillows, and on the typical sanatorium reclining chair, by regulating the back so that it will be at an angle of thirty degrees. In this position relaxation is most easily obtained. If the patient is dressed, there must

not be any garments that would restrict the free exercises of the diaphragm and abdominal muscles. The patient must strive to relax in mind and body and is told to imagine that the respiratory movement begins in the toes of his right foot, the inhalation gradually traveling upward as far as the diaphragm on the right side, then crossing over to the left and gradually descending during exhalation onward to the left foot. While, of course, this breathing upward from the toes to the abdomen is merely imaginary, it results in a diaphragmatic breathing, and whatever quantity of air is inhaled passes mainly through the lower portions of the lungs while the upper portions where tuberculous lesions are usually located, are put, if not at complete, at least at comparative rest.

The patient must of course concentrate his mind on this procedure. He cannot and should not be thinking of anything else during this rest breathing period. The surest way to teach the procedure correctly is to ask him, during inhalation and during exhalation as well, to follow in his mind the physician's hand with index finger pointing as it moves in the upward direction from the right toe and over to the left side of the diaphragm, then downward to the left foot. When the physician's finger has arrived at the left side of the diaphragm, it will pause while the patient may hold his breath a second or two, or longer if he can, and then exhale during the downward movement of the finger. The relation of the duration of the two acts should be five for inhalation and four for exhalation. With some patients ten seconds may be spent for the cycle, five for inhalation, four for exhalation, and one for stopping between inhalation and exhalation. With other patients, particularly the more advanced cases, it may be necessary to count rapidly and shorten the cycle. Nearly all patients are able to lessen the number of respirations per minute with absolute comfort by stopping after the exhalation two, three, or more seconds before inhaling again. In fact, one may leave the duration of the interval between each cycle of the respiratory movements to the ability of the patient to remain quiet before inhaling again. If he is able to hold the air from inhalation several seconds longer, he may also do so.

It will often be necessary to repeat this rest breathing procedure several times before the patient has fully grasped the *modus operandi* and does it correctly. A good way for the physician to assure himself that his patient has fully mastered and understood the rest breathing is, while indicating the direction and duration of the inhalation with one hand, to place the other over the upper portions of the lungs, and thus observe whether they are at complete or at almost complete rest, and with his eyes fixed on the abdominal region see that the diaphragm does its work properly. Later on, by placing his own hands, one on his chest and the other on his abdomen, the patient may learn to know whether or not he is doing the diaphragmatic breathing correctly and giving the upper portion of the chest the desired repose.

One thing which is essential is to interest the patient in this rest breathing by explaining to him why this type of breathing is resorted to and the object to be attained. The quieter an organ of the body is kept the less likely it is to become tuberculous and the more easily it is cured. A tuberculous gland heals more rapidly than any other invaded organ in the body. Skin tuberculosis or a tuberculous bone or joint will heal more quickly when put at rest or subjected to as little movement as possible, and so does a lung completely collapsed by artificial pneumothorax or thoracoplasty. Animals which breathe slowly contract pulmonary tuberculosis less readily than those which breathe fast. We have an example in our domestic animals; the cow which breathes sixteen to eighteen times a minute is far more susceptible to tuberculosis than the horse which breathes only eight times. Rest of the invaded lung is the great object which we physicians try to obtain by all possible means that will not harm the patient.

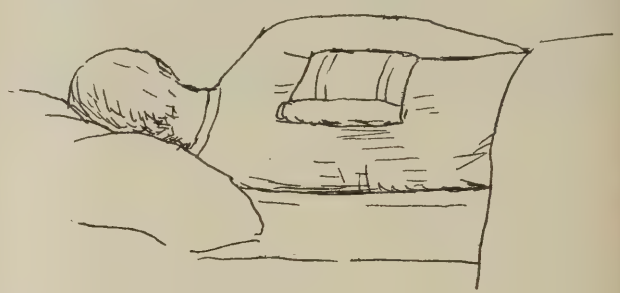

Fig. 4.—Knopf's saddlebag.

It will be surprising if I state how easy it is to train a patient to breathe only with the diaphragm and to reduce his respirations in numbers. If a patient is in a habit of breathing twenty times a minute and is able to reduce his respiration to only ten, and to do this rest breathing for ten or fifteen minutes several times during the day, so that the accumulated time he had devoted to it amounts to two and a half hours, he has saved his lungs fifteen hundred respirations or three thousand excursions, or in five hours three thousand respirations or six thousand excursions.

When one considers that by this method of breathing not only the lungs but the heart also is spared many a movement and energy is thus preserved to a considerable extent, its value must be obvious. According to the latest edition of Howell's textbook on *Physiology* (3), the total work done by the left ventricle at each systole is equal to 20,085 grams centimetre. By reducing this to pounds and feet, it figures about one and a half foot pound for each contraction of the left ventricle. Lawrason Brown estimates that the right ventricle does one half pound of work. This added would make the work performed by the heart about two pounds for each systole. Thus if with each normal heart beat an energy equal to two pounds is exerted, and by reduced and restricted breathing we save the heart two or three

contractions per minute, we spare the heart from 1200 to 1800 foot pound of energy in five hours.

Lastly, diaphragmatic breathing will also cause a better circulation in the lower extremities and abdominal viscera, especially aiding the hepatic function, all of which is so essential for patients who are ordered complete physical rest on a reclining chair or bed.

I have been asked whether women who, for biological reasons, do not use the diaphragm in breathing as much as men do, can adopt this physiological adjuvant. Whether or not it is because of the abandonment of tightly laced corsets that I have had no difficulty in this respect, I do not know. At any rate, I have also the assurance of Prof. Joel E. Goldthwait, of Boston, who has had such a large experience with cases in which he prescribes diaphragmatic breathing in order to correct faulty conditions due to postural or typical orthopedic deformities in women, that he has no difficulty whatsoever in making his female patients use diaphragmatic breathing.

The psychological effect of this method is likewise of distinct advantage. When the tuberculous patient, during the active stage of his disease, is condemned to absolute inactivity in bed or on the reclining chair, he will often become despondent because he has nothing whatsoever with which to occupy his mind. By resorting to this method of respiration he has something to do which will divert his attention, and the more often he does it the more will he improve his condition.

Although we believe that by our spirometric and metabolic tests we have demonstrated that in controlled diaphragmatic respiration there results no air hunger and no increase or accumulation of carbon dioxide, some patients might feel the desire for deep inhalation or a more rapid breathing after the prescribed exercise. The possibility of harm being done by a true or imaginary effort to compensate the air supply can be overcome by teaching the patient to return only gradually to his normal type of breathing. Dr. Martin F. Sloan, the director of the Maple Heights Sanatorium, at Sparks, Md., who has tried the controlled diaphragmatic respiration extensively, uses this precaution of gradual return to the previous mode of respiration. He is convinced that this prevents an acceleration of the respiratory movements liable to counterbalance the effect of the limited movements.

In this short paper I cannot reproduce the many comments on the method which have been made by eminent physiologists and phthisiotherapeutists, but one of the members of this association, Edward Archibald, on learning of my method, stated that it was "a most valuable contribution to the therapy of tuberculosis." One of the greatest European authorities on artificial pnuemothorax and thoracoplasty, my late friend, Christian Saugman, of Denmark, wrote: "I have studied your method with great interest and tried it on myself and was able to reduce my respirations to three and a half per minute without any difficulty. . . . I will employ your method in the treatment of my patients at the sanatorium."

From the reports which have come to me of the results obtained from an extensive trial of this method, I will only mention the one from George Dock, formerly of the Washington University of St. Louis, now of the Barlow Sanatorium, Los Angeles. Dr. Dock says: "I am especially interested in this method because I think you have shown a definite way of lessening movement in the part of the lung most affected as a rule. I look on the improvement of the abdominal circulation as of great importance and believe the psychological element introduced is of no little value. This method is a useful addition to the class treatment of tuberculous patients. The demonstrations and questions raised give many opportunities for learning the many problems and inhibitions of the "lunger." Like all methods that lead to closer cooperation between patient and therapeutist the work has had a distinctly good psychological effect. In various reports I have had the patients give me I find such statements as the following: Helps to relax, quiets the heart, lessens fatigue, increases endurance. I have a very strong impression that the more intelligent the patient the more benefit he is likely to receive from carrying out your adjuvant along with the other necessary measures."

I am not prepared to say that this rest breathing, limited to the diaphragm, may not also help in preventing the greatly feared aspiration pneumonia in the better lung, and perhaps also help to bring about a more rapid formation of fibrous tissue; at any rate, I believe it is reasonable to suppose that such beneficent influence may be obtained thereby. To this end I think it will be good practice to teach the patient the method of controlled diaphragmatic respiration a few days before the operation, and if it is feasible to apply mechanotherapy at the same time by limiting the respiratory movements of the slightly involved apex, it will not be difficult for him to learn to restrict his respiration to the lower portion of his comparatively well lung. When the patient has learned how to use his respiratory function before the operation as a likely safeguard against respiration pneumonia, he will be glad to use it as a therapeutic agent to further safeguard his predisposed apex from invasion afterwards.

Before allowing our patients to resume walking exercises we must see to the strengthening of the muscles of his extremities which may have become almost atrophied from disuse. There is no better means to accomplish this than simple massage, consisting in friction, kneading, tapping, and stroking in the direction of the venous circulation, which any nurse or relative of the patient could easily attend to. Massage rouses dormant capillaries, increases the area and speed of the circulation, furthers absorption, and stimulates the vasomotor nerves, all of which are aids and not hindrances to the heart's action and to nutrition in general. Of course, massage cannot manufacture blood cells or coloring matter, but it can put in circulation those that are dormant in the system. Unless this is done, there results the condition picturesquely described by the poet physician, the late S. Weir Mitchell, as "like the want of circulating money during times of panic, when gold is hoarded and not made use of, and interference with commerce and manufacturing results."

By this therapeutic means we not only improve the flabby, disused muscles, but at the same time help to overcome the anemic condition characteristic of almost all tuberculous sufferers, and before leaving

the subject of massage I would like to tell you the opinions of a few eminent tuberculosis specialists on its value. Edward R. Baldwin and Lawrason Brown, at the head of the Trudeau School at Saranac Lake, are very emphatic about massage being an important adjuvant in modern phthisiotherapy, and one almost neglected in this country. Otis, of Boston, an equally well known expert in tuberculosis, said: "Massage, I believe, is a valuable aid in the postsanatorium rehabilitation of the patient in arrested tuberculosis, and indeed before that period in certain cases."

I have already referred to the value of careful sponging with tepid water at any time the patient has an appreciable rise of temperature, but after he is up and about, like all tuberculous patients, he will be quite susceptible to changes of temperature. Aside from the tonic value to the cutaneous, nervous, and muscular system of judicious hydrotherapy, I do not know of anything which so lessens the susceptibility to colds as the application of cold water. Of course, with one recovering from a surgical operation or one who has never been accustomed to the use of cold water, it is important that precautions be taken to avoid the possibility of chilling the patient. At the beginning the cold water application should be made in the form of an ablution, either in the morning when the patient arises from his bed, or in the evening after he has been in bed for about ten minutes and has become thoroughly warm. If necessary, the bed can be warmed with the aid of a hot water bag, which may remain at the feet of the patient. It is also well to have the hydrotherapeutic arrangement as near the bed as possible. If the bathroom is not situated close to the bedroom, it is best to use a circular English bathtub, about three feet in diameter and ten inches high, half full of water at a temperature of about 105° F. This should be placed near the bed. The second part of this simple hydrotherapeutic arrangement consists of a wash basin full of cold water with a large sponge, placed near the tub on a table of ordinary height. The temperature of the cold water can vary from 40° to 90° F. From 40° to 45° is usually the temperature of the water coming out of the faucet. It is best to begin with the cold water at a temperature of 85° and then go down gradually five degrees every four or five days until a temperature of 40° is reached and borne comfortably. It is always well to have the windows closed and the room warm while the patient is taking his cold water application. If in spite of all precautions the patient should fail to react, the cold baths must be discontinued.

The ablution is applied in the following way: The patient stands in the tub with five inches of water at 105° F.; at the beginning the nurse in attendance, and later on the person himself, takes the sponge soaked in the cold water and squeezes it out first over the back of the neck, then in front over the thyroid, then over the left shoulder, and then over the right, letting the water run down so that the entire body is bathed with cold water. The patient then dries himself quickly, not necessarily very thoroughly, with the aid of a large, rough towel, and returns immediately to the bed. Under the warm cover he will feel warm and the little moisture left on his body will soon dry. Through this procedure reaction is assured, and the patient rarely fails to feel comfortable and enjoy the cold water application. If the head should get wet accidentally, he should dry it thoroughly. This is a precaution the patient should always take whenever he has washed his head. When the system has become accustomed to the cold water used in this way, the patient can safely resort to the application of a needle bath, a shower bath, or plunge.

In regard to heliotherapy, I must confess that in general we have not yet been very successful with the treatment in pulmonary tuberculosis, and in fact a good deal of harm has been done by the injudicious exposure of consumptives to the rays of the sun. The reason of this is obvious when we consider the constant movement of the lung as compared with glands, skin, a fixed joint, or peritoneum and intestines; all these organs are benefited by heliotherapy because they are at rest, or at least at comparative rest. The failures of heliotherapy in pulmonary tuberculosis are to my mind also to be ascribed to the exposure not having been gradual enough. From my own experience, I have reason to believe that would we follow Rollier's method and begin by the exposure of a few inches of the cutaneous system from below upward at graded intervals and duration and limit the application of the rays to such portions of the lung as are greatly limited in their movements by an external restriction, collapsed by artificial pneumothorax, by the section of the phrenic nerve, or thoracoplasty, and only at such times when the patient is doing his rest breathing, heliotherapy or even artificial sunlight may be of great value.

Of psychotherapy in thoracoplasty before and during operation we have already spoken. It is of course of equal value during convalescence and thereafter. When the patient is convalescent he must of course be warned against overexertion on account of his diminished breathing space. He should never walk or work when tired nor to the extent of getting tired, nor when a feeling of dyspnea comes over him. My young colleague, Dr. J. Burns Amberson, formerly of the Loomis Sanatorium, now of Detroit, Mich., has well said: "Like pneumothorax, thoracoplasty in itself does not remove the tuberculosis. The surgeon sets the stage for better healing; and then, under the supervision of the physician, the patient continues hygienic rest treatment until such healing is attained. To neglect this is to thwart the possible good effects of surgery."

In conclusion, let me say, thoracoplasty, if successful, will give the patient a new lease of life and a comparative feeling of well being which he had probably not experienced for many months or years. Well may we physicians be grateful to our colleagues, the surgeons, who are now helping us by their skill to cure many formerly hopeless cases. There is every reason to believe that with the help of thoracic surgery the time may come when we will no longer have to speak of incurable cases of tuberculosis.

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Our Social Evasion*

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It is generally conceded that any man having the choice to be regarded either as a fool or a knave would infinitely prefer the latter classification. We psychoanalysts have thus far been spared the former appellation and we have preserved our self possession fairly creditably against the cries of knavery on the part of our social environment. After all, there is a certain romantic flair connected with the reputation of the gay Lothario or the free lance. But we shall not find ourselves so calm in the face of imputations that challenge the accuracy of our mental processes. I am convinced that our position is edging very near the danger line in this respect and I think it befits us to confront our position very seriously.

As with all progressive ideas, psychoanalysis has from its inception weathered heavy seas of criticism, but the indications are now that as scientists we are seriously paying the price of an unconscious social compromise with popular feeling. The moment has come for us to examine ourselves as a social organization from the point of view of our relation to the social organism as a whole. I am convinced that, unless we take entirely new and fresh ground with respect to the problem of the neurosis as it affects the organismic life of man, we must be content to subside into the rank and file of conventional practitioners who lay no claim to farreaching measures of medical research but who confine their activities to relieving momentarily the locally impaired constitution of their individual patients.

The circumstance which every psychoanalyst knows is that the neurosis of the individual rests in every instance upon a secret family situation. The image fixations with which a patient replaces his natural human relationships and to which he tenaciously holds against all the inroads of reality every psychoanalyst recognizes as the root of the neurosis. In his individual capacity as an analyst it is his endeavor to resolve these obsessive and mentally inbreeding fixations by permitting the patient to enter with him into a quite objective analysis and understanding of these spurious components responsible for his introverted mental state. Every psychoanalyst knows also—though he has as yet not taken practical account of it—that the family of the individual patient is but one small portion of the larger social cluster or aggregate comprising our wider human family in its entirety. This more extensive social organism has its social unconscious also. It has socially its image substitutions as truly as the single person. This social organism is as much under the domination of the mother complex in the selfprotection it fancifully procures for itself under the social image of church, state or economic system as are the individual personalities whom we undertake to analyze in their more obvious because more restricted expression of this same image protection.

As individual analysts we have endeavored to maintain a strictly scientific attitude toward our individual patients. But have we maintained as consistent an analytic position with respect to the personality of society at large? In our exclusive preoccupation with mental processes in their ontogenetic aspects, have we taken into account the study of these same processes as represented in the individual's phylogenesis as a social organism? We have viewed the individual as an isolated part in our complex societal life, but it is my position that we have failed signally to confront this organismic societal life of which the individual is but an isolated manifestation.

It must be obvious to us as psychoanalysts that there is a definite conflict, a marked discrepancy in our position that needs to be brought to the light of analysis. It must be clear that if we continue to blink the facts of our social pathology as of our own part in its processes, we are automatically excluding ourselves from the position of research students holding the wider interests that centre upon a program of preventive medicine with respect to the community as a whole. In any other course this analytic organization becomes an entirely nontechnical gathering composed of physicians who accept quite naively the social complexes surrounding them and who can therefore only sit discussing such complexes, as the newspapers, periodicals and world conferences do, upon a quite manifest and naive level.

In saying this I would like to be understood as speaking not as a theorist but from the ground of definite laboratory investigation of our social complexes through the definite analysis of social or group situations. Actual experimentation with groups makes clear beyond question the wide disparity between the analytic position we occupy in regard to the neurosis as it exists in the individual and the position we hold toward this same manifestation when confronted in its mass or social amalgamations. Technically viewed, the position of the group is identical in its social systematization with the position occupied by the neurotic in his individual systematization. Like that of the neurotic the systematization within the group is most jealously guarded by it. We well know that the motive to the individual neurosis, with its intricate mechanisms of defense, is the private advantage the neurotic unconsciously believes it holds personally for him. But if we will employ a technic that affords a group basis of analysis, we shall find experimental ground to show that the organized group or cluster maintains socially an equally complicated system of defenses and that its motive is not one whit different from the individual motive actuating the neurotic personality. The neurotic fully believes unconsciously in the egoistic images that are the projection of a system that is private and personal to him. Likewise the social group is unconsciously no less a prey to images that are the projection of a system that is wholly esoteric and dissociated.

When we come to confront the indiscriminate social group under the experimental conditions of a social analysis, it becomes evident that such aggregates are socially bound up with and are an integral and con-

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tinuous part of a widespread emotional system extending throughout society at large. Even a quite casual survey makes plain how overwrought and unstable is the temper of the times. Our newspapers amount practically to clinical charts in social psychopathology. But the national consciousness of which these daily bulletins are a record knows well how to confine itself to the mere manifest content of this telltale material of our social mind and to avoid with painstaking accuracy any analytic penetration into the latent content such as would throw light upon its national and international import.

But if we remove a segment, as it were, from the midst of this widespread social organism, if we segregate an integral portion of this social continuum and submit it to the process of an actual laboratory analysis, it is shown that this generic social consciousness is throughout a prey to phobias and obsessions, depressions and elations, inhibitions and compulsions, feelings of reference, grandiose ideas, suspicions of persecution and a hundred other classical symptoms that are the direct counterpart of those with which we are familiar in the individual patient. These conditions, whether expressive of a social mother complex or of a national father imago, may be clearly shown upon analysis to be based upon reactions that are identical with the image projections of the individual. But although, as with the individual, these reactions are kept assiduously repressed and unconscious within our social life, nevertheless it is these psychopathological conditions which analysis reveals to be the real inciting occasions of our political, industrial and economic dissensions as they are the underlying occasion for the more violent paroxysms of our national life such as those we know in the clinical episodes of religious hysteria and of war. Our industrial panics and political crises with their ambivalent phases of excitement and decline represent the equivalent of obsessive states with which we are confronted again and again in the demonstrable cycles of our individual patients. Our frenzied greeds, our national competition and usurpations rest upon definitely compulsive reactions within the national consciousness. Our market inflations and our financial depressions are but the fluctuating mental states that represent the manic and depressive phases of an unstable social cyclothymia.

The superficial and naive explanations popularly assigned as the real occasion for these manifestations —such, for example, as the alleged necessities of territorial expansion, international commercial competition, the urgency of tariff readjustment, race prejudice, nationalism, our economic franchise, the rights of the minority, etc.—all these manifest symptoms are but unconscious rationalizations well calculated to repress from the social consciousness the real underlying occasions of our national neuroses. What is called capitalism, Nordic superiority, bolshevism, fascism, class consciousness, one hundred per cent. patriotism, industrial democracy, our fluctuating ratios of monetary exchange—all these and a thousand more are but mental states which, instead of being treated by us as substitutive manifestations calling for definite analysis and adjustment, are universally accepted as bona fide expressions and their latent meaning remains completely unchallenged in its psychosocial implications.

Far from having instituted a thoroughgoing laboratory analysis of these social states of mind with a view to their basic resolution, in our fictitious social mood we continue still to hold the quite superficial and oldfashioned therapeutic attitude that applies external correctives to these internal conditions. Accordingly, all manner of remedial measures have been resorted to by way of correcting these obvious disorders. Have we not a nationally widespread therapeutic agency represented in prohibition? Have we not everywhere throughout the country the imposing piles of masonry that constitute our churches, our asylums, our penitentiaries and our schools of reform? Nor must we forget our excellent institutions of learning with their munificently endowed chairs for the study of international relations and programs for world peace. Upon an even larger therapeutic scale we have our international programs of disarmament, our peace conferences, our leagues and interleagues of nations. But in all this evasive attitude of the popular mind how does it happen that we as an organization give our assent to such superficial measures of meeting the condition? How does it happen that we give our sanction socially to superficial measures of psychotherapeusis to which we would not think of subscribing in the individual case because of what Freud has shown in the individual case to be the utter futility of dealing locally and superficially with a condition that is deepseated and that affects the constitution of the individual organism as a whole? The category of knaves would indeed be most delectable in comparison with the fool's paradise in which we unconsciously place ourselves in this wholly esoteric and arbitrary inconsistency.

It is significant—this discrepancy between our analytic attitude as it confronts the individual and our completely nonanalytic attitude as we confront this same neurosis in its collective manifestation. As psychoanalysts we would not think of applying moral stringents to our neurotic patients by inducing them to mend their ways under threat of withdrawing from them their favorite amusements. It would not occur to us to attempt to intimidate them with punishment or to decoy them with secret promises of gain. These older therapeutic measures that applied the rod or conferred the crown we have long done away with. Yet the social consciousness of which we ourselves are a part still adheres to the superficial program of correctives that actuated the older schools of psychotherapy prior to Freud.

It need hardly be pointed out that for practical laboratory purposes our own psychoanalytic concern must necessarily restrict itself to our own psychoanalytic group. For in the absence of a social analysis the organization composed of our own members is in no different case from that of the social organization elsewhere. Naturally it is our tendency not to see our own embroilment any more than the social group elsewhere or the neurotic individual sees his and for precisely the same reason—namely, that it is our own embroilment. We are all a daily witness that the neurotic exercises over his neurosis the private prerogative of secret repression and evasion. But as a social group we have not seen that we likewise exercise over the collective involution which we ourselves share socially the same automatic evasion and defense. In dealing with our neurotic patients we do not argue

or discuss with them their unconscious situation. No more may we meet our own unconscious situation with argument and discussion. We analyze the neurosis comprising the circumscribed system of the neurotic individual. We must also analyze the neurosis comprising our own social systematization. We have not dealt with this social condition analytically simply because, being a social condition, there is involved analytically our own participation in it. But if we are to proceed with the development of our work with logical fidelity, we cannot continue to indulge our present social evasion nor escape the wider social implications inherent in our analytic principle of procedure. In scientific honesty it becomes necessary that the social organism comprising ourselves shall submit itself to a process of analysis that is as thoroughgoing and uncompromising as the method of analysis we have learned through Freud to apply to the individual patient.

It would be very natural to suppose that what is here said in respect to our subjective needs may be approached in the calm and detached spirit with which we view the factors entering into the material of our objective investigations. But in this interpretation we are again adopting a position that is the parallel of the neurotic individual who prefers to take a discursive and theoretical stand toward his neurosis in order to evade his individual analysis. To adopt a theoretical interpretation of our own subjective situation as a socially organized unit is likewise to evade the need of the subjective analysis of our own social organization. The laboratory of psychoanalysis cannot be the conventional laboratory in which we stand as onlookers of processes in front of and outside of ourselves. On the contrary, in such a laboratory we ourselves become the material under investigation at the same time that we become the observers of such material. For in a social analysis the elements under examination are the elements of our own social tissue. We become as definitely the unwilling and refractory subjects of our own experimentation as the refractory and unwilling subjects we confront in our laboratories of animal experimentation. It is therefore a far cry from a position of mere theory to the actual condition of a laboratory analysis, and the difficulty lies not so much in the impossibility of a social analysis as in the unwillingness of the individual to let go his own individualism and participate in this social condition of selfinquiry.

As a result of experiments in group analysis the conclusion is for me unavoidable that, in the absence of an inclusion of the individual's phyletic substrate as a social organism and of the social factors inseparable from this wider setting, we have failed to compass the true meaning of our individual analysis and have faltered seriously in respect to our findings. It has become clear to me that our private basis of analysis has entailed errors in three essential respects. First, we have unwittingly read into our private interpretations factors for which there has often been lacking sufficient scientific warrant; second, we have failed to take account of many factors for which there has been ample scientific authority; and third, in our attitude toward factors which were demonstrably present we have too frequently placed upon them values and interpretations which are out of all relation to their biological significance and setting. With such findings before me it is naturally not possible for me any longer to regard as scientifically conclusive a program of analysis which restricts itself solely to our individual complexes and does not include a consensual laboratory investigation of the phyletic or social complexes of which the individual is a part.

In papers read recently in Homburg and elsewhere I have attempted to define in detail the logical ground for this social and consensual basis of analytic inquiry as a necessary condition for placing our observations within the mental sphere upon as sound a laboratory basis as the observations we habitually bring to the laboratories of biology elsewhere (1). As in our observation of material in the laboratories of biology we demand a consensus of perception among the laboratory observers, so there is equally demanded a laboratory consensus of perception for the clear determination of the data composing the field of our mental observations. It is my contention that our observations rest today upon a purely private and esoteric basis of judgment. If anyone is disposed to doubt this, let him but recall how frequent is the circumstance in which a condition offers in the view of one analyst one interpretation while in the view of another the same condition is interpreted in a totally different way. Or, if further proof is required, consider the frequent disparity in the expert psychiatric testimony offered in our courts of law. We are all aware that it is a quite usual procedure to find two groups of psychiatrists—both of them composed of men of undoubted ability, training and scientific sincerity of purpose—confronted with identical clinical material and yet interpreting that material upon diametrically opposed bases of judgment. The result is that in the view of one faction an individual is judged as hopelessly insane and in the view of the other as a quite normal individual. When there will have been established a definite laboratory criterion of practical observation in the estimating of mental and emotional data such shocking discrepancies in the positions of scientific men submitting testimony before the social community will of necessity be precluded.

There is not the opportunity here to develop this thesis more fully. Suffice it to say that our resistances to a laboratory inquiry into our own social complexes will necessarily be very great. In the laboratory undertaking of my associates and myself, which after all is in its mere infancy, the resistances encountered by us singly and collectively have seemed at times almost insurmountable. But this is really no matter. We cannot maintain the position of scientists and hesitate before the implications of our own scientific position. However we may balk in the face of the need to examine our own mental processes, there exists nevertheless the situation in which the individual psychoanalyst is involved socially in exactly the same unconscious processes as characterize the unconscious of our individual patients.

In face of the arduous difficulties that have already confronted us as individual psychopathologists, a thesis that involves fresh obligations of endeavor is not a welcome thesis, I know, and in stating it I find myself in a quite novel position. From the very inception of this association my interest has been

closely identified with the interests and endeavors of the physicians composing it. But, due to accidents which have fashioned for me a new angle of observation into our common problems, certain conceptions have been forced upon me which necessarily diverge from the restricted position that has been for these many years our common ground of outlook. I should indeed be acquitting myself in the rôle of both fool and knave were I not sensible of my initial obligations to the conceptions underlying the work of this organization. But upon the closer scrutiny acquired through an extension of our analytic basis of procedure it will be found that the emphasis upon the analytic conceptions which we have so long shared and the emphasis to which recent years have led me need not, in essential respects, be lacking in scientific accord. Whatever difference may appear between our present outlooks is due, I feel, only to the circumstance that there has not been the opportunity for an analysis among the members of this group on the altered basis to which I refer. My feeling is that subsequent experimental contacts on the part of this group with the group technic with which my associates and I have in the last years been occupied must ultimately enlist the interest of this organization and that the actual laboratory application of our common experience to our social problems will become as necessary a supplement to the individual analysis that now engages the interest of this association as it has become the necessary supplement to the analytic interest of my associates and myself.

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Syphilis in Its Relation to Iritis and Other Eye Conditions*

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In the earliest stages of acquired syphilis anomalies of the pupillary reaction are noted frequently, and later on the Argyll-Robertson phenomenon is sometimes seen. Also when patients come to the ophthalmologist complaining of headaches, vertigo, eyestrain and double vision, it is found that they are sometimes suffering from brain syphilis, tabes, general paresis, or disseminated sclerosis. My experience teaches me that the eye is more frequently involved in the early invasive stages of syphilis than was formerly supposed. It will not be possible in the brief time allotted for this paper to give a detailed account of all the various syphilitic affections of the eye, because syphilis attacks the eye from all angles. Once a person is infected with the Spirocheta pallida, neither eye is immune from the ravages of the disease—not even the eye *in utero.*

I shall mention in detail only a few of the outstanding diseases of the eye which you may have to treat; the rare syphilides may also be encountered.

HEADACHE AND EYESTRAIN

These are important symptoms. Headache is one of the earliest symptoms in infected persons and one of the most frequent. When patients complain of nocturnal headaches which keep them from sleeping, and also complain of a general fullness in or about the head, it is generally a meningeal involvement. It should arouse suspicion and cause one to have a Wassermann blood test made.

Of course, headaches may be due to various other causes, such as errors of refraction, focal infections, food intoxications, excessive stimulation from alcohol or tobacco, muscular asthenopia, and so on.

*Read at the annual meeting of the Surgical Corps of the Lehigh Valley R. R., at the Hotel Pennsylvania, New York, February 20, 1926.

DIPLOPIA

A patient comes to the general surgeon complaining of double vision long before any paralysis of the exterior ocular muscles can be detected. You will observe that the diplopia increases as the object is moved to the side of the paralyzed muscle. There are two kinds of diplopia, lateral and vertical. If the third nerve is affected the images are crossed and we have a diverging strabismus. If the sixth nerve is involved we have an homonymous diplopia and a converging strabismus. If there is a difference in the height of the images, the superior or inferior rectus, or the superior or inferior oblique may be involved. If the entire trunk of the third nerve is involved, the eye diverges, there is ptosis, the iris is widely dilated and accommodation is paralyzed. Paralysis of the exterior ocular muscles may be followed years later by tabes, disseminated sclerosis and paretic dementia (Manthner).

According to de Schweinitz, fifty per cent. of these cases are due to acquired syphilis. Certainly all should have a Wassermann test. Of course, local infections—the "Three T's," sinus trouble and acute infectious diseases—must always be considered in making a diagnosis. Sometimes it is found that there is a mixed infection.

Recently a woman, aged fifty, came to me with double vision and a ptosis of one eye. The Wassermann test was made and found to be positive. She also had a "dirty mouth." I put her on antisyphilitic treatment and my "reform diet," but she made little progress until I had three infected teeth extracted. One of these teeth had a pus bag hanging from the root of it. She has now recovered entirely. Of course I kept up the antisyphilitic treatment. The

prognosis is good in these extraocular muscle cases if taken early and the patient is not too old.

VERTIGO

This is sometimes the first symptom complained of by patients with ocular palsies and should always arouse suspicion. Of course, vertigo may be due to eyestrain, sinus trouble, diplopia, oral sepsis, diseases of the internal ear or intestinal toxemia. Sometimes a full dose of castor oil will help to clear the diagnosis.

PTOSIS

This is another symptom of acquired syphilis which the general surgeon may have to see. If the drooping eyelid is raised, it will generally be found that in all probability there is diplopia also. Of course, ptosis may be due to some other condition, but acquired syphilis is one of the outstanding causes of the trouble.

Disturbances of the cranial nerves are always suggestive of cerebrospinal syphilis. Recently I had a case of double ptosis in a woman aged twenty, with paralysis of most of the exterior ocular muscles. The Wassermann in this case was negative, but she had all the earmarks of hereditary lues. She had the peculiar physiognomy of syphilis, consisting of coarse, flabby skin, scars of old fissures at the angles of the mouth, a sunken bridge of the nose, roof of the mouth highly arched, and the typical Hutchinson teeth. What more would you want for a diagnosis? We looked her over for the "Three T's" also, and gave her vigorous antisyphilitic treatment. She is still under observation and is improving.

SYPHILIS OF THE IRIS

According to Duane, acquired syphilis is by far the most frequent cause of iritis. That certainly corresponds with my experience at the New York Eye and Ear Infirmary, and it may be added that iritis is one of the most frequent symptoms of acquired syphilis. There are several varieties. The clinical manifestations vary greatly. The symptoms may be those of ordinary acute iritis of the plastic type or the serous type or the true syphilitic type—iritis papulosa. In plastic iritis there is a deep ciliary infection, forming a zone of short vessels around the corneal margin, with cloudy, aqueous swelling and discoloration of the iris, irregularity in the shape of the pupil, which is generally contracted, tension normal, exudation in field of the pupil—photophobia, lacrimation, defective vision and great pain. The eyeball is also tender to pressure.

Of course, it is not necessary to have all these symptoms at first. Pain is generally what causes the patient to consult a physician, and then redness of the eyeball may alarm him. In the serous type there are all the symptoms mentioned above and in addition there are punctate deposits of exudation upon the posterior surface of the cornea, and sometimes in these types there is elevation of tension. This inflammation generally extends to the ciliary body and the choroid.

In true syphilitic iritis, in addition to the above symptoms, there may be seen in the iris one or more distinct, yellowish red, nodular elevations, varying in size from a hemp seed to a pea. These deposits may be found either in the sphincter region or at the periphery and they have a tendency to coalesce. The prognosis is good in the first two varieties, but none too good in the papular syphilides, as the eyeball sometimes goes on to an atrophy.

DIAGNOSIS OF SYPHILITIC IRITIS

The diagnosis of syphilitic iritis will of course be based upon the history of the case, the symptoms, and the Wassermann reaction. In the last few years the diagnosis of syphilis has become more and more dependent upon the Wassermann reaction and there has been a tendency to neglect those clinical signs so characteristic of the disease. But should every iritis which has no characteristic marks be called syphilitic, simply because it occurs in a syphilitic person? Often, to be sure, this would be right, but still a syphilitic person may acquire an iritis from some other source or a toxemia from some other cause. At least he should be given the acid test for the "Three T's," which stand for infected teeth, diseased tonsils and toxemias of the gastrointestinal tract. I presented a paper on my "Three T's" at the meeting of the American Medical Association, at Atlantic City, in June, 1919. I said at that meeting that a dirty mouth is one of the greatest menaces of the human race, and that oral sepsis is the arch enemy of us all. Your patient may have infected teeth, diseased tonsils or he may have an intestinal toxemia from food intoxication; in other words, he may be suffering from some toxemia entirely foreign to his syphilis, or he may have a mixed infection. I lay great stress upon checking up the focal infections, the "Three T's," in every case of syphilis of the eye. Of course, the possibility of gonorrhea must not be lost sight of, as it is prevalent in those suffering from syphilis.

SYPHILIS AND ORAL SEPSIS SIDE BY SIDE

To illustrate what I mean by a mixed infection, I will cite a case of plastic iritis in both eyes, which I showed at the New York Academy of Medicine in 1917.

A patient had a four plus Wassermann and fourteen badly decayed teeth. I admitted him to my service at the New York Eye and Ear Infirmary, treated his iritis locally and started him on inunctions of mercury. We began pulling his decayed teeth and at the end of five days we had extracted fourteen of them. Following the extraction of his teeth the improvement was so marked and rapid that after seven inunctions I decided to stop them to see if the iritis would continue to improve. The patient made a rapid recovery and left the hospital at the end of four weeks with normal vision. He gained fourteen pounds in weight in the first nine weeks that elapsed after the teeth were extracted. I treated him for constitutional syphilis later on, but I wanted to see what would happen after the removal of those septic roots.

TREATMENT OF SYPHILITIC IRITIS

Local treatment should consist of hot applications at frequent intervals. Leeches should be applied to the temple for pain. A one per cent. solution of atropine should be dropped in the eye every three or four hours. The pupil must be kept dilated. A stronger solution of atropine may be used if necessary, and the tension watched. A five per cent. or ten per cent. solution of dionin on account of its

lymphagogue and analgesic action may be used. Rest in bed should be insisted upon if possible, and smoked glasses. The constitutional treatment should include the use of neoarsphenamine. Engman prefers arsphenamine. Between injections, there should be inunctions of mercury. As Engman says, "mercury has been the savior of the human race in combating this plague." Of course, we use the reform diet and all foci of infection must be cleaned up. Drinking and smoking are prohibited, also tea and coffee.

INTERSTITIAL KERATITIS

Etiology.—In a great majority of cases, inherited syphilis is the cause of interstitial keratitis. A small percentage of the cases are due to acquired syphilis. Tuberculosis may be a cause also, and there may be a mixed infection.

Symptoms.—Interstitial keratitis begins as a diffuse haziness generally in the centre of the cornea of one eye, with congestion, irritability of eye and dimness of vision. The opacities consist of dots in the parenchyma of the cornea. In a few weeks the whole cornea has become opaque and we now have the ground glass cornea. The slit lamp, demonstrating the corneal haze, may be resolved into very fine points of greyish color. At this stage there is ciliary congestion, iritis; a great deal of pain and photophobia. The bloodvessels derived from the ciliary vessels are thickly set in the layers of the cornea and produce the dull red color—the "salmon patch" of Hutchinson. Sometimes these patches extend all over the cornea, producing a cherry red effect.

Fortunately ulceration rarely occurs. After a varying period of weeks or months, the other cornea is attacked. Vision may be reduced to light perception. In the course of time, varying in accordance with the treatment, the cornea begins to clear. It is a slow process at best. Secondary glaucoma may develop and tension must be watched. The diagnosis is easy. The subject generally presents a combination of physical defects, typical of the disease. The stature is dwarfed, there is a peculiar physiognomy, coarse, flabby skin, scars and prominences on the forehead, sunken bridge of nose, roof of mouth highly arched, and Hutchinson's teeth.

Strange as it may seem, we find Wassermann negative in about twenty-five per cent. of these cases. Fortunately the prognosis is favorable, although I have seen some cases most refractory.

TREATMENT

Notwithstanding the signs of hereditary lues, the patients should be given the Wassermann test. A long continued course of mercury is indicated. Hutchinson preferred mercury and chalk with opium, if necessary. We use neoarsphenamine as we feel it shortens the duration of the disease. Between the neosalvarsan injections we give mercury and chalk or inunctions of mercury and syrup of iodide of iron as a tonic.

It is most important to look these children over for the "Three T's." Nearly all of these children have defective teeth. Some of them, I find, have never used a toothbrush. Diseased tonsils and adenoids block the postnasal space; moreover, their diet is always bad, with an excess of sugar and sweets and soft carbohydrate foods. Surely they all need the reform diet.

After the acute symptoms subside, they should have plenty of fresh air, sunshine, and exercise, wearing, of course, smoked glasses.

SYPHILIS OF THE EYELIDS

Chancre and gummata.—Both are rare diseases. Rodent ulcer and epithelioma have some points of resemblance to chancre, but the former two occur late in life. When the gumma involves the tarsus it is known as tarsitis syphilitica.

Syphilis of conjunctiva.—Occasionally an obstinate conjunctival inflammation, with little or no secretion, is encountered in syphilitic patients. Also one may see chancre, papillary syphilide, or mucous patches. All are rare diseases.

Syphilis of lacrimal apparatus.—Constitutional syphilis rarely attacks the lacrimal apparatus primarily, but sometimes it does later on. Diseases of the lacrimal apparatus are also seen in inherited syphilis.

Syphilis of the sclera.—There may be an episcleritis and a gummatous infiltration of sclerotic. Sclerokeratous iritis is nearly always due to syphilis; occasionally it is due to tuberculosis. Syphilis may involve the whole uveal tract in one eye or both simultaneously.

Syphilis of choroid and retina.—These are associated, even when occurring alone; the treatment is the same. The eyeground should be examined from time to time. In no other condition is vigorous and prompt antisyphilitic treatment more desirable. Syphilis of the retina or chorioretinitis must be considered a serious condition. If treated early, the prognosis is fair. At best there is usually some impairment of vision.

Syphilitic papillitis or chocked disk.—This requires prompt specific treatment—general measures such as reform diet, smoked glasses, rest in bed, and hot applications to the eyes.

ATROPHY OF THE OPTIC NERVE IN SYPHILIS

Several types are met with, as follows: 1, primary atrophy or tabetic atrophy; 2, secondary atrophy; 3, postpapillitic atrophy; 4, retinitic or choroidal atrophy. Syphilis of the lens is seen only in patients suffering from inherited lues. Syphilitic periostitis of the orbit is rare. It may occur in a gummatous form, in which case there would be an exophthalmus.

CONCLUSIONS

All patients with any disease of the eye should have the Wassermann test. The details of the eyeground should be studied carefully in all cases of acquired syphilis. Syphilis should be looked upon as a chronic constitutional disease and treated as such.

In obscure conditions of the eye, the negative Wassermann is often misleading. In order to confirm the diagnosis it may be necessary to resort to an examination of spinal fluid. If the Wassermann is three plus or four plus the diagnosis is confirmed; if it is negative, with characteristic symptoms, the patient should have specific treatment just the same. If we suspect tuberculosis, test should be made for it. If positive, tuberculin can be given subcutaneously while giving inunctions of mercury. They work very well together.

All patients should be given the acid test for the Three T's and placed on the reform diet. I cannot

go into the diet at this time. You will find it in the MEDICAL JOURNAL AND RECORD of March 5, 1924.

The most important factor in congenital syphilis is social hygiene—prevent the marriage of syphilitic individuals.

Acquired syphilis is one of the outstanding health problems of the day—which means periodical health examinations of all patients. I therefore hold that it is just as necessary for the ophthalmic surgeon to get his house in order before subjecting his patient to a major operation upon the eye, as it is for the general surgeon to clean house, and that is the reason why we always insist upon a Wassermann test before operating.

The three great therapeutic agents, outside of antisyphilitic treatment, are: 1, rest for the patient; 2, removal of all foci of infection, and 3, reform diet.

Complete rest from business worries and cares, especially when syphilis affects the cerebrospinal system; but of course the patient must have exercise.

The action of all drugs used in the treatment of syphilis will be enhanced by the three great prophylactic remedies.

40 EAST FORTY-FIRST STREET.

Relationship of Ophthalmoscopic Pictures to Arterial Disease*

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In the presence of normal organs, longevity of man depends on the condition of his arteries. In preventive medicine our attention must be centred on preserving the arterial system. Early recognition of arteriosclerosis is, therefore, an important factor. Blood pressure, while indicative of arterial disease in the majority of cases, does not always define the condition of the patient's arteries, as blood pressure may be functional, or transient. On the other hand it is possible to have arterial disease without any elevation in blood pressure.

Elsewhere in the body the arteries can be felt, but in the eye they can be seen. The importance of studying the arteries in the fundus cannot be overestimated. The majority of internists do not avail themselves with sufficient frequency of this valuable source of information. I might say that those who make a routine examination of the fundi do not study the arteries closely enough to appreciate the variety of pictures corresponding to the gradual progress of arterial disease.

I have discovered no new signs, I am merely reporting my observations of fundus conditions in correlation with cardiovascular disease. These observations were made on a large number of patients in hospital and private practice. When hypertension is present without change in the retinal arteries we are dealing with hypertension which is either functional or toxic. Prognosis as to condition of the arteries is good.

I do not believe that it is possible to have general arteriosclerosis without some change in the retinal arteries.

The following are the changes that we notice in arteries, undergoing the process of sclerosis:

1. White reflex from the large trunks of the arteries. This must be differentiated from juvenile reflex. In the latter, there is a dazzling of light, which extends into the spaces between the bloodvessels, and is also very marked around the disk and macula. Juvenile reflex is rarely seen after the age of thirty years. In arteriosclerosis the reflex is limited to the arterial trunks.

2. The reflex gradually becomes more intense until the arteries assume a wirelike appearance. We also note the pressure effect on veins as the artery passes over them. A sclerotic artery passing over a vein causes an arrest in the blood flow, resulting in ampulla formation on the distal side and an attenuation of the vein on the proximal side. A vein passing over an artery shows attenuation at the crossing.

3. The next change in order is unevenness and attenuation of the arteries giving the calibre a slightly beaded appearance. The arteries are generally more pale than normal. The smaller branches show a tendency to beginning tortuosity. I might mention here that tortuosity of the large trunks is not pathological and may be congenital. Dilatation of large veins followed by tortuosity is an early sign of choked disk.

4. Small branches become markedly tortuous. This is most apparent in the region between the disk and the macula, in which region the small veins also become markedly tortuous.

5. Small hemorrhages, which are frequently found at the terminals of small arterioles or veins. Small exudates, which are fatty degenerations of the hemorrhages or serofibrinous exudates. Sometimes hemorrhages may be large. The macula may show a chorioretinal atrophy with a mottling of pigment.

6. Perivascular connective tissue changes, characterized by white marginal lines: also blocking or obliteration of some of the very small arteries, which are then replaced by white strands of connective tissue.

7. Edema of the disk is usually a late sign, but hyperemia of the disk may appear early. Papilloedema of arteriosclerosis shows only slight elevation. Blocking of the central artery, or vein, may occur before the formation of small tortuosities. Sclerosis of large trunks is frequently accompanied by sclerosis of the chorioidal bloodvessels. This condition is associated with reduction in acuity of vision, caused by a low grade retinal atrophy and atrophy of pigment epithelium. The appearance of the retina is that of sharply defined tesselated fundus, in which the islands of chorioidal pigment and chorioidal bloodvessels are clearly outlined: the disk shows a yellowish pallor.

Pathology of the large trunks only is frequently unrecognized and is not generally accompanied by high blood pressure. The latter seems in proportion to changes in the small branches.

The average blood pressure, corresponding to

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change No. 1, is 150 or under; No. 2, 170; No. 3, 180; No. 4, 190 to 200; No. 5, 200 or over. In patients with a fully developed picture of arteriosclerosis, hypertension is frequently too high for the sphygmomanometer to record. These figures are not always absolutely correct, but it is possible to estimate the blood pressure in most cases. Patients with advanced arteriosclerosis may have much lower pressure after a severe illness, cardiac disease, asthenia, starvation, or rest in bed. It is natural to suppose that the cerebral arteries have changes similar to those of the retinal arteries. Just as we can have blocking of the central artery, causing ischemia of the retina with atrophy of the retina and disk, resulting in total blindness, so we can have blocking of a cerebral artery, causing softening of the brain, resulting in paralysis. Thrombosis of the central vein causes a very marked hemorrhagic retinitis. A similar accident may occur to a cerebral vein, resulting in cerebral hemorrhage causing an attack of apoplexy.

These accidents to cerebral and retinal bloodvessels may occur in the absence of any high blood pressure and before arteriosclerosis is evident in the small arterioles. In fact high blood pressure is more likely to be associated with thrombosis in small branches giving rise to less severe symptoms, whereas a low blood pressure is probably the cause of thrombosis in the larger trunks, owing to insufficient *vis a tergo* through diseased and narrowed arteries. This would explain the frequency of hemiplegia in comparatively young patients without high blood pressure. Albuminuric neuroretinitis, with a good deal of exudate around the disk and macula, is not always accompanied by high blood pressure, unless the patient also shows advanced arteriosclerosis.

In eclampsia we may have neuroretinitis with detachment of the retina and high blood pressure, all of which may gradually disappear with hardly a vestige of the condition, when the patient makes a full recovery. In other cases of eclampsia we find advanced arteriosclerosis of the retinal bloodvessels, with persistent high blood pressure following the attack. Diabetes may be accompanied by retinitis, without marked changes in the retinal arteries.

All this would point to the possibility of retinal change caused by toxemia, with transitory spasm of the arteries, which have not undergone any marked sclerotic change.

Acute glomerulonephritis is not accompanied by any retinal manifestation, unless chronic nephritis had existed previous to the acute attack.

There are really two forms of the socalled albuminuric, or renal, retinitis. One of toxic origin, with active parenchymatous nephritis, the other of arteriosclerotic origin with interstitial nephritis. In the latter kidney function is in proportion to the stage of progress of arterial disease. In this form prognosis as to duration of life is much more favorable.

In the first form exudates constitute the predominating picture, while in the other form advancing changes of the arteries, previously described, stand out most prominently.

Proficiency in reading the fundus pictures comes with constant practice. Change in the retinal arteries may be the only objective sign of arterial disease in the incipient or even somewhat advanced stage. In the absence of subjective symptoms the ophthalmologist is frequently the first to discover the presence of arterial disease, with or without hypertension.

140 West Seventy-ninth Street.

Idiopathic Paralysis Agitans*

Report of a Case in a Man Thirty-Five Years Old

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I shall first endeavor to give a brief résumé of this disease. This is a condition which one might expect perhaps to meet with more frequently in a hospital of this type and size, yet a review of the hospital records resulted in the discovery of only three cases. The first of these patients was discharged voluntarily from this hospital; the second was one with a definite etiological history of encephalitis and the man later died from an intercurrent disease; the third case was of idiopathic origin occurring in a man of seventy-two, who also died from an intercurrent infection. Since this article was written, five other patients with affections of postencephalitic origin have been admitted to this institution.

Definition.—Paralysis agitans, shaking palsy, Parkinson's disease is a disease usually of later life, characterized by peculiar tremors, rigidity, attitude, expression and gait. It is not a common disease and has not until recently any definitely recognized anatomical basis. It comprises about one per cent of all nervous diseases.

History.—This disease was at first clearly described by Parkinson (1) in 1817 in his famous thesis on "Shaking Palsy." He described it as "an involuntary tremulous motion, with lessened muscular power, in parts not in action and even when supported; with a propensity to bend the trunk forwards, and to pass from a walking to a running pace; the senses and the intellect being unimpaired." It was subsequently dwelt upon by various writers, Todd, Trousseau (2), Romberg (3) and many others. It was not until thirty or forty years later that an exhaustive clinical picture of this disease was made by Charcot (4).

Etiology.—The age at which this disease occurs is rather significant, the majority of these patients being between fifty and seventy. Erb (5) states that the greatest number of cases occur in the sixth decade of life. Younger persons and those in middle life have also been known to have had paralysis

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agitans, but in most instances, it was a syndrome which followed some other disease, as poliomyelitis, encephalitis, or syphilis. Stearns (6) reports a case of idiopathic origin occurring in a girl of twelve. It is twice as common in males as it is in females. Race is no factor in its etiology, although it appears to be more prevalent in some nationalities than in others. Dana (7) found it oftenest in New York among the Irish, Polish, and Germans. It is thought that heredity plays some small part in its origin, but this fact is not definitely determined. Overwork, emotional conditions and psychic and physical trauma in some cases bring a latent paralysis agitans to the foreground. Arteriosclerosis is thought to be a chief factor in bringing about the presenile syndrome of paralysis agitans.

Symptoms.—The prodromal period or stage of invasion varies from one to three years. The disease is insidious in onset. Among the rather characteristic prodromal symptoms are irregular pains of sharp character in the extremities where the motor disturbances first make their appearances. These pains usually cease as the disease advances. Paresthesias and gastric distress with diarrhoea may occur; general malaise with headache, sweating, mild vertigo, palpitation, sialorrhea, anxiety and excitability are also symptoms which may occur during the prodromal period.

Jelliffe (8) classifies the symptoms into three groups:

1. "The main group of sensorimotor disturbances, varying in intensity and location.
2. A number of sensory, vasomotor, trophic, and secretory disturbances.
3. Psychical symptoms which are variable and which are possibly unrelated to the condition itself."

The sensorimotor disturbances consist of increase of muscular tonus, with rigidity, and resulting contractures and motor disturbances, with tremor, compulsory gait, forced attitudes, forced movements and absence of facial expression. An increase in the muscular tonus is a fundamental feature and, as a result of this increased muscle tonus, there follows the rigidity, masklike countenance and contractures. The increase of muscle tonus is usually an early sign of the affection and together with tremor are the two most typical symptoms; associated with the hypertonus and rigidity, there is slowness of motion and a steadily increasing stiffness, together with retardation of the motor impulses.

The situation at the onset varies considerably. As a rule, the symptoms are first manifested on one side only of the body, and are usually more severe on this side, a condition which may last for years. As an example, in a rather marked case, the rigidity may involve the muscles of the neck and spine, the patient assuming a stooping posture, the head being flexed, the face stolid and masklike; the arms are pressed against the body, the elbows flexed, the wrists extended and the fingers usually flexed at the metacarpalphalangeal joints and either flexed or extended at the other joints; the legs are usually flexed and adducted. Any group of muscles may become involved though the arms and legs, together with the facial muscles, are the ones most usually affected. At times ptosis occurs, or the patient has considerable difficulty in opening his eyes after closing them. Because of this stiffness of the ocular muscles, reading becomes difficult in the more advanced cases. Ocular palsies may result; slow pupillary reactions are also found. If the laryngeal or pharyngeal muscles are implicated there results a retardation of speech; and these affections become more marked with the progress of the disease so that in time the patient may be unable to talk or swallow. The speech is usually described as slow and monotonous. This hypertonus and rigidity is sometimes associated with the usual reflex signs of pyramidal tract involvement, the reflexes being normal or else slightly exaggerated, and usually there is no Babinski, clonus, Oppenheim, etc., unless there be a complication.

The gait is rather characteristic of the disease, being slow, shuffling or festinating. (Festination is the term applied to a peculiar gait which may be described as the slow run with the body and head in advance of the legs.) However, the gait may be normal for several years after the initial onset.

Tremor is the typical outward manifestation of the disease and this in the majority of cases seems to be the primary sign, although, vasomotor signs are usually present before this is noted. This tremor is characterized by the uniformity of its excursions, which are, at first, small, slow and rhythmical. These tremors average from four to seven per second, according to the group of muscles involved. These movements are mostly coarse although they vary. When this tremor affects the hand, it gives rise to the pill rolling movement characteristic of the disease.

The muscles involved in the early tremors vary considerably, but usually the upper extremity is involved before the lower, the hand in particular, some writers claiming the left more than the right. The reason for this is unknown. The tremors of the fingers consist of flexion and extension, abduction and adduction; those of the forearm, flexion and extension, pronation and supination. The movements of the legs which are affected to a less extent and less frequently than the arms, consist of flexion and extension. With the progress of the disease the tremor becomes more widespread and there is usually a disproportion in the severity, a hemiplegic type of onset and persistence is rather frequent; monolimbic types do sometimes occur. The tremor usually disappears with sleep, but in the more advanced cases the tremor may become so continuous that it ultimately disturbs the patient and causes exhaustion. The tremor tends to be decreased by active exercise; emotion and excitement increase it, touching the affected limb or part may temporarily cause the tremor to cease. Statistics show that tremor may be absent in as high as twenty per cent. of cases, i. e., in the type known as paralysis agitans "sine agitatione."

The disturbances of equilibrium are manifested as follows:

The patient rises with difficulty, pauses for a while, the body and centre of gravity is tilted forwards and he advances with slow, short steps; this movement may change into a forward running gait-propulsion. The patient may keep on until he runs against something or seizes upon some support to stop himself. This festination may be initiated by

giving the patient a forward push. In rare cases one sees the opposite gait, a running backwards "retropulsion." Lateropulsion also occurs, but is rare; in this the patient runs sidewise.

The secretory symptoms are hyperidrosis, increased salivation, polyuria and occasionally diarrhea. Sialorrhea is the most important of these. Among the vasomotor changes are cyanosis, tachycardia, alteration of temperature and dermographia. Trophic changes involving the skin occur also but are rare.

The psychic disturbances (9) consist of emotional depression, agitation and psychic pain; anxiety, hallucinations and delusions of paranoid nature or concerning bodily states as well as varying defects of memory with very slight mental confusion. These psychic manifestations may precede the neurological signs and thus lead to mistaken diagnoses.

The sensory symptoms include pain, thermal and tactile disturbances but are not characteristic features of this condition. The early pains are usually fleeting in character; anesthesia, paresthesia and hyperesthesia are found occasionally but not invariably. When present they are usually indicative of some lenticular or thalamic involvement.

The reflexes are not markedly altered although there is considerable variation. In some cases signs of pyramidal tract involvement are found.

The laboratory findings in the idiopathic form are neither definite nor constant. Examination of the blood is essentially negative, the cerebrospinal fluid is likewise negative, and the urine is negative with the exception of a polyuria in some cases. The urine may show at times a phosphaturia.

Prognosis.—This disease is incurable, there is a gradual advance, and in a few cases there are periods of improvement. Some cases come to a halt and the cases taking this course are believed to be of luetic origin. Remissions and exacerbations are common. The course in the arteriosclerotic cases is usually long drawn out. Excitement and emotion increase the progress of this disease. There are no cases known where recovery has taken place. The patient becomes bedridden and death is usually due to some intercurrent infection. The duration is from eight to ten years; it may be shorter or longer than this but rarely over twenty years.

Differential diagnosis.—The diagnosis of the classical Parkinsonian type is rarely difficult, provided some of the cardinal symptoms are present, the posture, gait, masklike expression and tremor being so characteristic that the disease is almost unmistakable. The diagnosis is only difficult before the development of these symptoms and during the prodromal stage.

Multiple sclerosis of the cerebellar type may show the classical picture of a paralysis agitans but this disease usually occurs in younger individuals, the cardinal symptoms being volitional tremors, which appear and increase with the effort to perform voluntary acts, nystagmus, which is generally lateral, scanning speech, and lastly, changes in gait occasionally combined with ataxia.

Postencephalitic Parkinsonianlike syndromes have been frequently observed in countries where encephalitis is epidemic. The striking feature of this encephalitis is the rather acute development and which is sometimes represented by the excitomotor type of Pierre-Marie and Gabrielle Levy.

Hysteria is sometimes mistaken for this disease, but here the occasional hypertonus is different, as is the tremor, the latter being more readily influenced by diversion and distraction.

Paresis, especially in cases involving the basal ganglia: Here the tremor is fine and is absent when the parts are at rest. The hypertonus is more or less evident, the pupillary reactions are involved and the serological findings easily aid in differentiating the two.

Senile tremor is not unlike the tremor in paralysis agitans, but its onset occurs much later in life, moreover, it begins bilaterally especially in the head, jaws and lips, and is unaccompanied by the characteristic rigidity of Parkinson's disease.

Posthemiplegic tremor is accompanied by a history of hemiplegia; there is paralysis and exaggerated reflexes and the disease is unilateral.

Retrocollic spasm.—Here only the neck muscles and frontalis are involved and the other symptoms typical of paralysis agitans are entirely absent.

Catatonic dementia precox.—This disease may be confused with paralysis agitans in young individuals, but the mental picture of schizophrenia is so characteristic that the diagnosis is seldom difficult.

Morbid anatomy.—No constant changes in the nervous system were found until recently. There have been many opinions: some believe it represents a presenile or senile degeneration involving the cerebellum, thalamus, or lenticular nucleus. The most pronounced lesions are, however, found in the mesencephalon. Brissaud was the first to point out the possible importance of a lesion in the substantia nigra as a cause of this disease.

Wilson (10) suggests changes in the corpus striatum, from certain resemblances to progressive lenticular degeneration. Hunt (11) localizes the motor part of the syndrome to disease of the motor cells in the globus pallidus, the vasomotor, secretory and trophic disorders representing central vegetative changes.

Vogt (12), Lhermitte (13), and others have demonstrated the reduction in the number of motor cells in the globus pallidus with accompanying neuroglia cell overgrowth in cases of idiopathic paralysis agitans. Lewy (14) in a series of fifty cases of idiopathic paralysis agitans, all of which showed a lesion in the globus pallidus, found alterations in the substantia nigra in eleven cases. Foix reports in cases of idiopathic paralysis agitans, pathological changes which were most prominent in the locus niger and globus pallidus, slightly predominating in the former location. Trétiakoff (15) believes that a lesion of the substantia nigra is responsible for paralysis agitans, basing his views on the examination of nine cases in all of which he found changes in the substantia nigra.

Lhermitte, Kraus and McAlpine placed little importance in the findings of Trétiakoff as he makes no reference to examination of the globus pallidus. The former believe that the changes found in the substantia nigra are secondary to the diminution and alteration in the cells of the globus pallidus.

In the majority of cases of idiopathic paralysis agitans there have been demonstrated definite lesions

in the basal ganglia, especially in the globus pallidus, corpus Luysii and substantia nigra.

In a later paper Lhermitte, Kraus and McAlpine (16) report the occurrence of abnormal deposits of iron in the brain of a case of Parkinsonism which exhibited no tremor. The abnormal deposits of the so-called "siderophilic substance" was found in each globus pallidus, in the form of globules; this substance was also discovered in the vessel walls. The deposit was mainly in the globular form and the vessels were much less affected. This distribution is unusual and differs from that found occasionally in paralysis agitans and other conditions in which the deposit is chiefly in the vessel walls. These findings they claim resemble those in some cases of epidemic encephalitis. They further state that they have as yet no proof that these deposits play any part in the symptomatology of paralysis agitans as similar deposits have been reported in other conditions.

(*To be continued*)

Epithelioma of the Lip Treated by Radiation

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There is no longer any question as to the value of radium, either alone or in combination with some other therapeutic procedure, in the treatment of epithelioma of the lip. The case reported shows what can be accomplished by the proper use of bare tubes of radium emanation, so that the neoplastic tissue is destroyed without much loss of normal tissue.

CASE.—M. M., male, Italian, aged seventy-two, was referred to me on July 15, 1925, with the following history: About ten months ago a small blister, the size of the head of a pin, appeared on the lower lip, in the median portion, which continued to grow in size, and bleed when irritated. The patient's appetite was good, and there were no constitutional disturbances. He had been been smoking a pipe for many years, and was in the habit of using alcoholic beverages in a moderate amount. An operation was advised but the patient refused and he was then referred to me for therapy.

Physical examination showed a well nourished, plethoric adult male in good general condition. Teeth were in poor condition. The local lesion, in the median portion of the lower lip, was an elevated papillary and nodular oval shaped mass, with irregularly hard margins, about three by two by one cm., vascular, and covered with some grayish exudate. In the patient's neck a small soft gland was palpable.

On July 18, 1925, the treatment consisted of the insertion of bare tubes of radium emanation into the local lesion on the lip, followed by deep röntgen therapy to both sides of the neck. A total of twenty-one seeds of emanation, each containing 0.35 mc. making a total of 7.1 mc., were inserted into the lesion, followed by a full erythema dose of deep x ray to each side of the neck in half doses, within the following ten days.

Two weeks after the initial radium treatment, the lesion showed distinct evidence of shrinkage, necrosis and distinct improvement. Examination on September 18, 1925, about two months after the first treatment, showed an ulceration with hard edges and granulation tissue, with almost entire absence of neoplastic tissue. About six weeks later the series of röntgen treatment to the neck was repeated.

On November 3, 1925, a radium treatment (200 mg. hrs.) was applied to the lip for four hours. Examination on December 11, 1925, showed lesion of lip entirely healed and no evidence of neoplasia.

The patient is still under observation, and will receive further local application, when advisable. In this case a good result has been obtained so far, with practically no destruction of more of the lip tissue than the area involved in the growth.

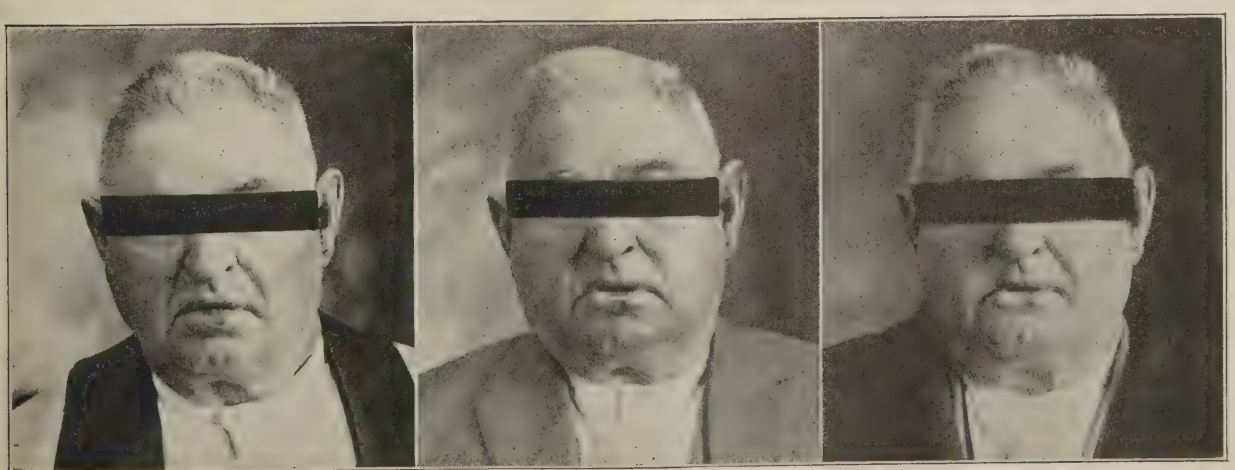

FIG. 1.—Case M. M., before treatment.

FIG. 2.—Same case as in Fig. 1, ten weeks after treatment.

FIG. 3.—Same case twenty-two weeks after treatment.

The Cystoscope as an Aid to Diagnosis*

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New York

(*Concluded from page* 738)

Case X.—B. G., female, aged forty, complained of vague and indefinite pain in the right upper quadrant with no radiation and no relation to meals. She was thought by the family physician to have chronic cholecystitis. No cystoscopy was done. At operation a normal gallbladder was found and in search for other lesions to account for the pain a prolapsed freely movable right kidney was discovered which was undoubtedly responsible for her complaint.

In gynecological surgery the cystoscope should serve as a very useful adjunct in determining the effect of pathological conditions such as fibroids, cysts and malignant growths on the urinary organs. I have seen a specimen of a kidney which was removed under the guise of a fibroid tumor. Darner reports two ectopic kidneys which were interpreted as tuboovarian abscesses. Similar cases are reported in the literature. A study of the course of the ureters will sometimes avoid their injury during the removal of large tumors or in a difficult hysterectomy. If necessary, ureteral catheters should be left *in situ* as guides. In one of the cases where hysterectomy was performed the right ureter was injured and subsequently formed a ureterovaginal fistula. An attempt to repair proved unsuccessful and later necessitated the removal of the kidney.

Cervical cancers sometimes infiltrate the vagina and uterus and invade the bladder which becomes fixed to the uterus. In advanced cases periureteral infiltration may occur narrowing the lumen of the ureter and eventually causing back pressure on the kidney resulting in considerable damage to them. It is extremely desirable to ascertain the extent of involvement of the bladder and ureters, as in advanced cases the urinary organs may be so involved as to preclude any radical intervention.

Cystocele not infrequently gives rise to urinary symptoms such as dysuria, frequency of urination, etc.; other lesions must be excluded before such symptoms are attributed simply to such anatomical defect. One patient was admitted to the hospital complaining of frequency of urination and dysuria; there was a marked cystocele but on routine cystoscopy we discovered multiple papillomatous growths at the neck of the bladder.

Another elderly woman was sent to the hospital suffering from lobar pneumonia, when in the course of her convalescence marked vesical tenesmus and dysuria developed of which she complained bitterly. The urine was negative except for a slight trace of albumin. A marked cystocele was present. Cystoscopy revealed the condition of trigonitis areata alba as described by Pelouze.

Cystoscopy in children is a phase which has not been given as much attention as it deserves, perhaps because of the greater difficulty in accomplishing such investigation or because indications are deemed insufficient. It is believed by many urologists that the indication exists more often than the procedure is carried out. In a series of 4,905 autopsies in children Bugbee and Wollstein (1) found in 2.3 per cent. anomalies of the genitourinary tract. Infections superimposed upon such anomalies very frequently give rise to symptoms and are diagnosticated with precision only with the aid of complete cystoscopic examination. Many unexplained cases of pyelitis recurring or protracted are often the result of some malformation of the urinary tract. Obscure abdominal pain in children is too often regarded as of intestinal origin where in reality some lesion in the urinary organs may exist to account for it.

Illustrating the advantage of cystoscopy in children the following case is cited:

Case XI.—L. F., male, aged eight months, entered the hospital in a uremic condition. On examination there was found a markedly distended bladder. The urine contained pus. At the age of six months the child was operated upon for intussusception because of a mass in the lower abdomen. It is believed by some who saw the child that this mass was a distended bladder, as no classical symptoms of intersusception were present. After complete investigation of the urinary tract it was discovered that there were multiple diverticula of the bladder which were resected and the ureter reimplanted by A. Hyman. A subsequent nephrectomy followed because of a badly damaged right kidney due to a chronic infection.

In two children aged two and six years we found at autopsy in the former a congenital stricture of the left ureter with a hydronephrotic atrophy of the left kidney and in the latter a double pelvis and ureter of the right kidney. Neither had symptoms which were interpreted as necessitating cystoscopy.

CONCLUSIONS

1. The cystoscope should always be employed where symptoms referable to the genitourinary tract are present, even if the diagnosis has been established clinically. More than one lesion may be present.

2. In doubtful cases of chronic appendicitis or gallbladder disease or any other obscure abdominal condition the cystoscope should be used as a diagnostic measure in order that the urinary tract may be excluded as the offender.

3. In pathological conditions of the pelvis one should study the effect on the urinary organs.

4. In children where a diagnosis of an abdominal lesion is open to question, especially where the urinary organs may be the seat of the trouble, the latter should be investigated by means of cystoscopy.

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*From the services of Dr. Henry Roth and Dr. L. Miller Kahn, Lebanon Hospital, New York.

Practical Therapeutics

X Rays in the Treatment of Diseases of the Skin and Other Pathological Conditions*

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The object of this paper is not a purely theoretical consideration of the physics and biology of the x rays. This has been discussed by me at length in another papers (1). What is intended here is a clinical study of the results of treatment with the x rays of a number of patients from my private practice.

In the treatment of skin diseases, there is not a single therapeutic agent as valuable as the x rays. One must, however, keep in mind that the rays are not a cureall and that in treating a skin affliction as well as an internal disease, the general condition of the patient must not be overlooked. The rays are used for their local effect only and even here they have their limitations. From these considerations, it would appear that the rays are valuable in the hands of a thoroughly trained clinician only. Knowledge of the x rays without a thorough understanding of the patient and the disease he is suffering from may prove very annoying to both patient and physician.

The rays are produced by the bombardment of electrons against the metal of the anticathode. This is brought about by the passage of a high voltage electric current through the tube. The higher the voltage the more rapidly will the electrons travel and the more forcible will be the bombardment. Upon this rate of travel of the electrons depends the power of penetration of the rays. High voltage produces hard rays which are highly penetrating, while low voltage produces soft rays. The latter do not penetrate deeply but are absorbed in the uppermost layers. For that reason, in superficial therapy, when the skin itself is being treated, this is sufficient. When we desire to treat an organ which is situated at some distance underneath the surface, we must avail ourselves of highly penetrating rays furnished by a powerful high voltage apparatus. In addition we also utilize several physical principles which tend to increase the penetrating power of the rays.

With proper doses, there is little risk of injury to the skin or internal organs. When a full dose is applied to the skin, a mild redness will appear in about ten days and wear off within three weeks. The quantity required to produce this is called the skin erythema dose. In treating skin diseases, different quantities are used at different times and these are measured against the erythema dose. In deep therapy, the dose is likewise expressed in percentage of the skin unit.

In treating diseases with the x rays, advantage is taken of the fact that different cells have different susceptibility to the rays. The younger and less differentiated cells respond more readily to their action than the older and more differentiated ones. For that reason it is possible, with the same dose to cause destruction of one group of cells and, at the same time, to stimulate others to increased growth. A good example of this is tuberculosis. While the tuberculous tissue is destroyed with less than fifty per cent. of the skin dose, fibrosis takes place simultaneously with the destructive process. In tuberculous conditions of the skin, glands, bones, and joints, the x rays have proved to be an agent of extreme importance. The general constitutional treatment of these cases, namely food, air, etc., must not be neglected. The x ray should also be supplemented with exposures to ultraviolet light for its direct germicidal effect, its general tonic properties, and its favorable influence on the calcium metabolism. Twenty-one cases of tuberculosis, among them scrofuloderma, tuberculous adenitis, orchitis, and several tuberculides were treated with uniformly good results. One group of cases of tuberculous adenitis deserves special mention, namely, adenitis of the tracheobronchial lymph nodes. These patients make the rounds, often for many years, with their dry hacking cough and pass as cases of bronchitis, hypertrophied tonsils, and what not, until someone, alert enough, has the chest x rayed and the true nature of the condition is found. The cough clears up and the patient improves in general health after comparatively few treatments. Five cases were treated with complete success.

ECZEMA AND ACNE

Among dermatological conditions which lend themselves to treatment with x rays, chronic eczema and acne furnish by far the greater number of cases. Of the latter disease, sixty-six cases were treated with sixty apparent cures, four improvements, and one nonimproved case. In five cases there was a mild recurrence, but they cleared up rapidly after further treatment. The essential feature of acne is the comedone formation. These become secondarily infected and the pustule is formed. The underlying mechanism of the pathology of this disease appears to be puberty, and time the only curative agent. The object of treatment of acne is to stop further comedone formation. This is best done with the x rays. Its action is twofold, by stopping the hyperplasia of the follicle and by diminishing the activity of the sebaceous gland.

There are many other skin diseases in which x rays are administered empirically or, at any rate, for their local effect only. In spite of the fact that in recent years much has been accomplished in ascertaining the etiology of skin diseases, the process in each individual case is tedious and often confusing. The patient is more interested in obtaining relief from his

*Read at a meeting of the North Bronx Medical Society, December, 1925.

suffering than in the permanency of his cure. This is true of all itching dermatoses including the various dermatitides and eczema.

One hundred and twenty-nine selected cases of chronic eczema were treated. The dry and infiltrated forms yielded the best results, while the moist types did not lend themselves as readily to this form of treatment. Very often it was necessary to treat these cases by other means until exudation was reduced to a minimum, when x ray treatment became possible. Extremely good results were obtained in the tylotic and crusted forms of the disease. One hundred and eighteen patients were apparently cured. Several resisted all efforts, while the balance were improved. The action of the rays in eczema is purely local and is brought about by the affinity of the rays for abnormal cells in the inflamed skin. As this does not in any way eliminate the cause, recurrences are to be expected in a certain number of cases with obscure etiology. There were nine recurrences in this group. In all of these patients, however, the condition cleared up after further treatment.

Twenty-seven cases of seborrheal dermatitis cleared up rapidly under this form of treatment. There were only two recurrences.

There is a group of generalized scaling eruptions which has hitherto resisted all efforts of the dermatologist. They all cleared up after a course of x ray treatments. This group included two cases of universal lichen rubra pilaris and two of dermatitis exfoliativa, one following psoriasis and the other of unknown origin.

The comparatively recent discovery of the epidermophyton resulted in the splitting off of a large group of dermatoses from the general group of eczema and is known as eczematoid ringworm. Together with eczema marginatum, intertrigo of the webbs of the fingers and toes, and a large number of cases of dyshidrosis, it constitutes a large portion of the average dermatologist's practice. They are all presumably due to epidermophyton infection, although that organism can not be demonstrated in every instance. Whitfield ointment and potassium permanganate are beneficial. Yet, for quick relief and even cure, there is nothing to compare with the x rays. Fifty-eight cases were treated with fifty-three apparent cures and five improvements. There were three recurrences in this group. The less favorable results were obtained among patients with the dyshydrotic form of the disease. The reason for it may be that x rays do not destroy germs. The ultimate cure of infectious skin diseases by the rays depends upon the tissues ridding themselves of the invaders by a process of exfoliation. Bacteria and fungi are thrown off in the scales. In superficial infections, this is quite easily accomplished. The same is not true of dyshydrosis in which the infection is deep seated and involves the epithelium as well as the sweat gland ducts.

Eczema occurring about the anus and genital region is a very troublesome condition. It is most commonly caused by local irritation due to discharges from the rectum or vagina, chronic hemorrhoids, and local epidermophytosis. A number of these cases are due to scratching in diabetic pruritus. Where the cause is found and eliminated, x rays yield almost perfect results. In cases with obscure etiology, recurrences are frequent. Even then, great benefit results in giving the patient relief, though it may be for a short time only. Twelve chronic cases were treated with but few recurrences. In the acute form of the disease, there is occasionally an aggravation of the itching and irritation after the first x ray exposure. This is only temporary and of no serious consequences, yet the patient is likely to be intolerant and discontinue the treatment before actual results can be obtained. These cases require ingenuity in management, not only of the disease, but also of the patient.

PSORIASIS

With the advent of endocrinology, some evidence of a relation between disturbances of the thymus and psoriasis has been found. This led, in this country, to the treatment of that disease with thymic extract and abroad, with a stimulating dose of x rays applied to the thymus. I have tried both methods in a number of cases, but am unable to express an opinion as to their efficacy. Improvement, if any, was very slow and it became necessary in all cases to resort to the application of x rays directly to the lesions. In spite of the fact that one can not speak of a cure in psoriasis, this method of treatment is much superior to ointments. It is clean, hence more convenient to the patient and results are obtained more rapidly. Thirty-two patients had their lesions removed by this method. There were eight known recurrences. In one case, the treatment had to be discontinued. This was a universal case and for the purpose of treatment, the body was divided in sections and treated one part at a time. The first portion yielded to three x ray applications. The recurrence here was so rapid, that during the treatment of the second section, a new crop appeared in the cleared up region. Further treatment was deemed inadvisable. Psoriasis patches appear to develop a resistance to the action of the rays after treatment. When a patch recurs after x ray treatment, it will not respond as readily to further treatment as it did in the first instance. On the other hand, it has been observed that treated patches are more apt to yield to medication, ammoniated mercury, for example, than patches that had no x rays applied to them. Occasionally a case is encountered which does not respond to x ray treatment from the outset.

SYCOSIS

The disease known as sycosis is amenable to treatment by means of temporary but total epilation of the hair by radiation. Ringworm and favus are treated in the same manner. The technic requires four fifths of an erythema dose of x rays, filtered through one millimetre of aluminum, and applied uniformly over the entire surface. The hair falls out about eighteen days after the application. The fungi and bacteria are thrown off with the hair. The latter regrow in from six weeks to three months. This work requires extreme care as permanent alopecia may be the result of imperfect technic. If isolated hairs remain after the x ray epilation, they must be removed by means of an epilating forceps, or else the disease may recur. In staphylococcus sycosis, especially, there is always some tendency to recurrence and the treatment may have to be repeated

after the new crop of hair reappears. Eight cases of sycosis, five of ringworm, and one of favus were successfully treated by this method. In one case of sycosis the condition recurred and there was need for further treatment.

Permanent epilation by means of radiation for the cure of hypertrichosis must be condemned because of the serious sequelæ that frequently follow.

Diseases of the nails such as eczema, psoriasis, and ringworm, which do not respond to the old method of treatment, yield quite satisfactory results with the x rays. A total of eight cases in this group were treated by this method with good results.

BLEPHARITIS

Blepharitis is another condition in which the results obtained from radiation therapy far surpasses all other methods. This treatment has become possible because of the knowledge that the eye structures offer a greater resistance to the destructive power of the rays than does the skin. Six cases of marginal and one of ulcerative blepharitis were successfully treated. In treating blepharitis, the rays are applied to the open eye and, naturally, the lashes remain unshielded. Four weekly applications are given, each one consisting of one quarter of an erythema dose, making it a total of one full erythema dose within a period of one month. There is no evidence of loosening or falling of the lashes, in spite of the fact that the hair will fall after four fifths of an erythema dose, if applied in one sitting. This demonstrates the extent to which the tissues may recuperate in vitality and function within that period of time.

Lichen planus, the neurodermatides, and all chronic itching dermatoses are favorably influenced by the rays.

PRECANCEROUS DERMATOSES

In the precancerous dermatoses, such as Paget's disease, dyskeratosis of Bowen, the seborrheal wart, and the premycotic stage of mycosis fungoides, the use of the x ray is of inestimable value. With the possible exception of the last one mentioned, the x rays will in all probability cure the condition and prevent malignancy in all cases. A number of cases of seborrheal keratosis were treated with complete disappearance of the lesions.

EPITHELIOMA

The treatment of rodent ulcer or basal cell epithelioma occupies a position midway between superficial and deep therapy, while the tumor itself forms the borderline between the benign and the malignant tumor. As all benign tumors except fibromyoma of the uterus, respond poorly to radiation therapy, this epithelioma is also slow in its response to that method of treatment. Sixteen cases in all were treated. Originally, the method consisted of deep radiations only. There was healing in every case, but recurrences were frequent and it became necessary to remove the growth by means of surgical coagulation. The process is now reversed. The tumor is removed and, after the wound is healed, x rays are applied as a prophylactic measure. The results are uniformly good.

Even in prickle cell epithelioma, as well as in all accessible malignancies, provided they are still operable, surgical intervention, preceded and followed by radiation therapy, appears to yield the most promising results. Surgical diathermy or the socalled endothermy does not open up the vascular channels and, in this manner, reduces the chances for metastasis to a minimum. The technic outlined above is not applicable in cases of lymphosarcoma and, to a lesser extent, in round and spindle cell sarcoma. There is nothing to be gained from surgery, because tumors of this class, especially the lymphosarcoma, yield so rapidly to x ray treatment that a complete disappearance of the growth sometimes takes place within a few days after treatment. Bone sarcoma, also fibrosarcoma, myxosarcoma, and chondrosarcoma are not much benefited by radiation therapy. Six cases of lymphosarcoma were treated. In one of the older patients mediastinal metastasis developed. Of the remaining, three had no recurrence six, seven, and eleven months after treatment.

In estimating the results of treating lymphosarcoma, one must not forget the possibility of error in diagnosis. Biopsy is a dangerous procedure. It predisposes the patient to metastasis formation. The diagnosis is made by physical examination and by the socalled therapeutic test, namely, the rapid disappearance of the tumor after radiation. Both may be misleading. The rapid disappearance of the tumor after radiation does not mean that we have a sure cure for this form of malignancy. Recurrence and metastasis are frequent.

OTHER MALIGNANT GROWTHS

Of the other malignant growths in which radiotherapy is of any use, breast cancer, malignant tumors of the uterine fundus, and, to a lesser extent, those of the cervix, promise the best results. Eleven breast cancers were treated, seven of them after amputation and four were inoperable cases. In two of the latter cases the patients died of metastasis, while the remaining two are alive and considerably improved six and ten months after beginning of treatment with the combined method of deep radiation and implantation of radium emanation seeds. In the seven postoperative cases, two patients reported for treatment after skin and mediastinal metastasis had developed and died a short time after. The five remaining are apparently well to day, after periods ranging from one to three years respectively. One patient with cancer of the uterine cervix is alive three years after the first course of treatment with radium and x rays. This patient does not show any signs of recurrence or metastasis. In a case of carcinoma of the lung the patient is improved both in the local condition of the tumor and in general health two years after a course of x ray treatment was instituted. The results obtained from radiation treatment in cancer of the liver, stomach, and esophagus did not justify the efforts. Hypernephroma yields quite readily to x ray treatment, yet the outcome is rapidly fatal. A patient with a large mass in the abdomen, resembling splenomegaly, was treated. There were no urinary symptoms. The mass disappeared almost completely after radiation. Four months later there was a recurrence. At this time, seven months from the first treatment, there is evi-

dence of cachexia and possibly metastasis. Five postoperative cases of rectum carcinoma were treated with x rays and radium. These patients are all alive and apparently well. The period of well being is, however, too short for statistical purposes, the longest being two years. Six cases of lymphogranuloma or Hodgkin's disease were treated. All patients showed improvement at first, but the disease recurred in every case. These patients do not respond as well to a repetition of the treatment and, finally, the rays seem to have no effect upon the tumor.

FIBROMYOMA OF UTERUS

Turning again to the brighter side of radiotherapy, the treatment of fibromyoma of the uterus looms up in the limelight. Barring a group of cases that are more suitable for surgical intervention, as, for example, myomata in young women where there is a possibility of myomectomy with a chance of pregnancy, and cases complicated by suppuration, liquefaction, inflammation of the adnexa, and suspicion of malignancy, the remaining sixty-five per cent. of all cases yield practically perfect results. The same is true of preclimacteric bleeding in which the cause can not be ascertained. Twenty-one cases of fibromyoma of the uterus were treated. In fifteen, amenorrhea resulted after a single course of treatment, in three cases after two courses, and in the remaining, a third course was required before the bleeding stopped completely. In five cases of preclimacteric bleeding, amenorrhea resulted after one course of radiation treatment.

PROSTATIC HYPERTROPHY

Another disease in which radiotherapy should receive first attention is prostatic hypertrophy. Four patients with that disease were treated. They ranged in age between sixty-seven and seventy-eight years. Three of them already led a catheter life and in one the frequency of urination amounted to once every half hour. They were all cured of their symptoms. One received three courses of treatment, two had two courses each, and one, a single course only. The technic is similar to the one used in uterine myoma. Occasionally a swelling of the organ takes place several days after the treatment. This is true of all glandular organs, but in the case of the prostate it may lead to very distressing symptoms, such as tenesmus, frequency of urination, etc. To avoid this, it is better to proceed rather slowly with the treatment so as to give the tissues a chance to recuperate before each successive field is rayed. Comparing the absence of danger and the comparatively small inconvenience to the patient treated by this method with the mortality from surgery, there can be only one opinion as to the method of choice.

One case of enlargement of the prostate, in a young man twenty-four years old, responded to the same method of treatment. The enlargement was presumably due to an old gonorrheal infection.

HYPERTROPHY OF THYMUS

Hypertrophy of the thymus with its troublesome and, at times, threatening symptom complex can be cleaned up with about six exposures to the rays. Eleven children were treated. In six, the treatment was completely successful, while the others dropped out before the course of treatment was completed, some of them after considerable improvement.

HYPERTHYROIDISM

Good results can be obtained in a certain number of cases of hyperthyroidism. I can only report two apparent cures, but considering the fact that these were the only two patients who finished their course of treatment, the results can not be regarded as bad. There were five other cases. In two of them the treatment was discontinued after the first or second session on account of increased toxicosis. They were very bad cases from the start. The others dropped out of their own accord.

CONCLUSION

In conclusion, mention must be made of the use of the rays in some constitutional diseases. Improvement, though temporary, is obtained in the leucemias by raying the spleen, glands, and cancellous bone. Raying of the spleen has proved to be efficacious in checking hemorrhage from any origin. It has given excellent results in the treatment of the various forms of purpura.

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Are Bacteria Killed by the Usual Staining Technic?—Adam Schmidt (*Klinische Wochenschrift*, September 3, 1925) has been enabled to show that bacteria are not killed by the usual heat fixation and subsequent staining with alcoholic watery solutions of aniline dyes, and that even with carbol fuchsin staining, the mere resistant bacteria retain their viability. Only with the gram stain are bacteria regularly destroyed. Consequently the following directions must be carefully observed because of the danger of infection: 1. The slides must be heated sufficiently. 2. The wash water must not be drained into the sink, as is usually done, but must be poured into a special receptacle and there disinfected. 3. Filter paper should not be handled carelessly but must be made innocuous after its use. 4. After their examination, the specimens must immediately be placed in a disinfecting solution.

A New Technic in the Application of Thiersch Skin Grafts.—Daniel McLellan (*Canadian Medical Association Journal*, September, 1925) lays on a sterile towel a strip of zinc oxide adhesive plaster, one inch wide and long enough to go completely across and adhere firmly to the skin on both sides of the raw area, with the adhesive side up. Six or eight thicknesses of gauze, one inch wide and long enough to go across the wound, are laid along the middle of the plaster strip, and a thin layer of vaseline applied to the surface. The Thiersch graft is cut in the usual way and laid, raw side up, on the vaselined surface of the gauze, the edges straightened out with a probe. Taking the adhesive by both ends the graft is applied, the adhesive being stuck firmly to the good skin on each side. This was left in position for eight days, when the adhesive was cut at the junction of the raw surface and the good skin, and turned back carefully.

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The Influence of Cervical Sympathectomy on Angina Pectoris*

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New York

I shall not review here the history of angina and its attempted relief with its hundreds of clinical and experimental reports, but I shall give you my own impressions gathered from many sources and from my own experience.[1]

First, as to diagnosis—from its very name, angina, we assume the presence of great pain. This usually appears in paroxysms of variable duration, but, in addition to the pain with its well known radiations, there are other symptoms which are so multitudinous that it is difficult to classify them. It seems also that the anginoid attacks are not always due to the same pathological condition. Wenckebach has gone so far as to divide angina into two distinct forms—one that he calls the chronic type in which there are repeated attacks, often of the greatest severity but with apparent health between and without objective signs; and the other, which he calls acute, in which the first attack leaves the patient broken and ill for a long time and which is never followed by a complete recovery with apparently normal cardiac conditions.

After reviewing the various descriptions of both classes I conclude that the socalled chronic type of the disease probably originates in the aorta (Allbutt) and is due to pure spasm with tension of the vessel wall. This may well be compared to the pain known as colic in other hollow viscera, and *vascular colic* would not be a bad descriptive designation of this phenomenon. When the spasm has passed, the patient feels perfectly well, much as in biliary, uterine or renal colic, relief coming when the visceral tension has gone.

In Wenckebach's acute form there are added to the colicky condition signs that point to the coronary arteries as the place of origin of the pain whether it is purely spasmodic in character or accompanied by disturbances in the vessel wall or lumen such as thrombosis or embolism. One can easily understand how a sudden interference with the blood supply of the cardiac muscle must also produce instant and grave changes in the action of the heart often ending fatally in a few moments. Occasionally there are slower changes associated with permanent cardiac disturbance which may last for a much longer time. Indeed, the effect of a slowly progressive blocking of even an important coronary branch may be partly nullified by the collateral blood supply through anastomotic vessels. Doubtless the two causes of angina may be coincident, i. e., the aorta and the coronaries may participate in the picture. In the aortic form of the disease (aortalgia) there is usually no change in either the sounds of the heart or in the rate and tension of the pulse no matter how agonizing the pain may be, while in the coronary type, whether due to spasm (which has never yet been experimentally demonstrated) or to mechanical occlusion, there will necessarily be a reduction in the power and regularity of the heart beat easily demonstrable in the peripheral arteries and often accompanied by the usual signs of cardiac failure such as edema of the lungs.

It is hardly necessary for a mere surgeon to discuss in detail the physiology involved. Indeed, cardiology has become a special branch of medicine and while it is the surgeon's responsibility to assure himself of the ability of the patient to endure operative therapy, he must depend upon his medical colleague for the finer points of diagnosis. Nevertheless, it is essential that the surgeon should be able to recognize in a general way that his patient is really suffering from a serious cardiac condition.

The pain of what I call the aortic form of angina is excited by anything which increases the blood pressure or the cardiac blood volume (Wenckebach); exertion, cold, excitement after a full meal, etc. Immediate rest is imperative and instinctive and tends to quiet the attack. Objective examination, as I have suggested, will disclose nothing pathognomonic. The surgeon must clearly understand that during any attack of angina there is the threat and possibility of death, in some instances due to the pain itself. In the acute or coronary form there may be slight sensations to warn the patient, or the attack may be absolutely sudden, appearing at any time, even during sleep. Danielopolu divides the syndrome into two kinds, *Angina d'effort* and *angina de decubitus,* and

*Read before the Medical Association of the Greater City of New York, November 16, 1925.

[1]An important symposium on angina pectoris is now about a year old. It was held before the Vienna Society for Internal Medicine and Pediatrics. The principal speakers were Wenckebach of Vienna, Tschermak of Prague, Danielopolu of Bucharest and Eppinger and Hofer of Vienna.

holds that only the former should be selected for operation. Still, we have already seen that the nerve tracts carrying the pain from aorta or coronaries are identical and his reasoning, which leads him to think that effort stretches a diseased aorta and produces the pain, would also lead to the conclusion that spasm or tension within the coronaries may yield to the same remedy.

It is recognized that certain groups of angina may occur without pain and the condition has been described as *angina sine dolore,* or painless angina. These cases certainly would hardly be suitable for operative treatment.

Although postmortem examination usually shows some sign of coronary disease, it has never been clearly demonstrated that angina pectoris is necessarily caused by these lesions and it is well known that coronary disease without angina is very common. Allbutt states, however, that in every case of angina there is disease of the ascending aorta; but, as before stated, both the aorta and the coronary have the same innervation for the production of the same kind of pain.

It has been suggested that habitual hypertension is one of the causes of angina, but individuals with normal blood pressure may also suffer.

Wenckebach believes that some form of nerve resection will probably cure or relieve the pain though manifestly it cannot eradicate the disease. The suggestion of nerve resection was made many years ago by Francois Frank. In 1916 Jonnesco operated with some success by resecting the entire sympathetic chain of one or both sides of the neck.

SURGERY

From this very elementary sketch, the problem of the relief of the painful phenomena of this disease or complex divides itself into two distinct parts; first, that of merely interrupting the tract which carries the sensation of pain to the brain; and second, reducing or abolishing the vascular spasm which produces the agony.

The first of these suggestions would seem simple enough were it not for the fact that recent empirical work on human beings has upset many of the opinions of the physiologists and there is no unanimity of opinion as to the exact direction of the sensory path to the brain. The second would also appear simple were it not that it is only by what may be called clinical experiment that facts have been discovered which it will be the business of the physiologists to explain.

We will discuss briefly the first of these questions, namely, whether it is desirable to rest content with a mere nerve blocking operation and, if so, how this can be most easily, safely and thoroughly accomplished.

Goodall and Earle in 1913 suggested division of the second, third and fourth thoracic sensitive nerve roots and since then there have been experiments by injecting these nerves with anesthetics (novocaine) in order to block them.

I have been told by George I. Swetlow that he has had success by injecting the posterior nerve roots with alcohol without a cutting operation. One of his half dozen patients remained well after six months. Swetlow has not observed any untoward symptoms following his procedure.

Other suggestions are the division of the depressor nerve which was first carried out by Eppinger and Hofer. They reasoned that because there is evidence that this nerve is sensory from the aorta, its division would be followed by relief; but, unfortunately, the depressor nerve in human beings is not easily found on dissection and may be missed altogether. It is almost certainly a part of the vagus and a dissection of this important trunk would be necessary in order to identify the depressor strand. To me this appears a formidable procedure when carried out upon the cervical part of the nerve.

In herbivorous animals the depressor nerve is well developed and easily found. Eppinger and Hofer even went so far as actually to divide the vagus in the neck in order to make sure that the depressor nerve had also been severed. This patient died of pneumonia. One patient died of laryngeal paralysis from simultaneous bilateral division of the superior laryngeal nerves for which tracheotomy had to be done.

The physiology of the depressor nerve function appears to me to be somewhat confused. If after division the upper end is faradically stimulated there is a fall in blood pressure. Why the section and not the stimulation of this nerve leads to diminished pressure it is hard to understand. At any rate the idea of cutting this nerve was conceived because it probably carried sensory fibres from the aorta. Danielopolu also suggests division of the vertebral nerve which passes from the stellate ganglion to the cord.

We will now take up the second method of relief—that which tends to reduce the spastic tendency in arteries. Surgeons have long recognized from their work in local anesthesia upon the larger bloodvessels that dissecting the outer coats of these vessels or ligating the vessel itself is accompanied by pain. I have exposed and handled the thoracic aorta with production of pain. It has also been shown by Jaboulay and, more recently, by Leriche, that stripping the adventitia from large vessels, this coat containing the sympathetic plexus, is followed by vascular paralysis and dilatation for a considerable distance below.

Tuffier dissected the adventitia from an aneurysm of the aorta, in order to tape it with a strip of fascia. There was relief from the pain of aneurysm and Delorme took this to be due to the removal of the sympathetic plexus.

There is reason to believe that the division or, better, the extirpation of the cervical sympathetic might have a paralyzing effect upon the aorta and perhaps also on the coronaries so that vascular colic would be impossible. To this paralyzing effect we may, in part at least, ascribe the relief afforded by the nitrites. Levine says that these drugs do no good when there is disturbed cardiac function. The nitrite test appears to me to be a fair one in deciding as to the probability of relief by sympathectomy.

From my own cases I can say that extirpation of a part of the cervical chain invariably produces some easily demonstrable reduction in the blood pressure. But the reduction has been in four out of five cases only temporary. Still, relief from the attacks or the diminution in their number has been encouraging.

Now comes the important question as to how much is necessary or advisable in the procedure. Should

the entire chain with the upper thoracic ganglion be extirpated (Jonnesco) or is it sufficient to remove merely the superior cervical ganglion? (Coffey, Brown and Kerr.) This will have to be determined by further operations, each one of which in our present state of knowledge must be regarded as a clinical experiment. Coffey and Brown, also Kerr, are of the opinion that the extirpation of the upper ganglion will accomplish as much as the more radical procedure and with much less technical difficulty and consequent danger and my own best case would lead me to the same conclusion. But physiologists try to explain this by assuming that sensitive fibres traverse the ganglion; a fact unsuspected until now.

A complete report of my own cases will be published at a later period.

Case I.—I will say, here, however, that my first case, that of a man sixty-two years of age, with frequent attacks diagnosed as angina by Dr. S. A. Levine of Peter Bent Brigham Hospital, was practically living on nitroglycerine which gave considerable relief. There was no evidence of coronary disease but there was hypertension (systolic 180). It is now a year and nine months since I avulsed his left superior ganglion and dissected out the nerve including the middle ganglion. Relief had been complete so far as the painful symptoms were concerned and the patient led a normal active life. He still felt, however, that the disease was present although absolutely without pain. I consider that this is as nearly a cure as may be hoped for in angina pectoris. Immediately after his operation the blood pressure dropped to 113. It was 160 just before the anesthesia was given. There had been a gradual rise to about 150. [Note of June 6, 1926: I have recently learned that this patient after more than two years of complete relief is now suffering from symptoms of coronary thrombosis.]

My next three patients were women, two of them with hypertension up to the limit of my manometer which reads to 300. In all these cases there was an immediate though temporary drop in the blood pressure following each procedure. All were treated by sympathectomy including avulsion of as much as appeared safe of the lower ganglion. It was necessary to operate on both sides in all except the first case, for although there was relief for varying time following the first operations the symptoms recurred within from one week to three months with a return of the hypertension.

My last case was that of a man with various neuroses in addition to his anginoid attacks, including arteriosclerotic nerve deafness of the right ear. He expressed himself as not relieved. None of the patients suffered any alarming symptoms during the operation or the convalescence from these nine resections. From this experience and that of others, I believe that if a sympathetic nerve resection is to be performed, it would be just as likely to be followed by success if only the superior and middle ganglia were removed.

CONCLUSIONS

1. The symptom complex known as angina pectoris is probably caused by tension within the walls of the ascending aorta or of the coronaries or both.
2. If this tension is the result of obstructive changes within the coronary arteries, the chances for relief by operation are not as good as in the aortalgic type.
3. Relief by nitrites would appear to be a test of some value in deciding upon sympathectomy.
4. There are two types of operation upon the nerves, one the blocking of the pathway of pain to the brain, the other tending to prevent vascular spasm or colic which there is reason to believe may be influenced by avulsion of the superior sympathetic ganglion.
5. Other things being equal, the procedure involving the least danger should be tried first, even though it consists of the mere blocking of painful sensations. An example of this therapy would be the alcohol blocking of the upper thoracic sensitive branches without incision. (Although procedures which tend to prevent spasm are more likely to prolong life.)
6. The question of operation must be decided in each instance by the cardiologist, the surgeon and the patient.
7. Finally, in a case diagnosed as angina the frequency and severity of the pain and the resulting incapacity should be deciding factors.

Mitral Stenosis*

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The subject of mitral stenosis, the severest of all cardiac lesions, has attracted interest for considerable time both from the clinical and experimental standpoint. Ever since Bouillaud formulated his laws of coincidence bearing upon acute rheumatic arthritis and endocarditis with Andral, Potain, Frederich and many others, proving clearly the infectious origin of this disease, clinicians have urged its early recognition. The early recognition of mitral stenosis, however, not infrequently presents difficulties even to skilled and experienced clinicians chiefly due to the absence of classical symptoms of the disease, which often do not make their appearance until damage to the heart muscle has proceeded to an alarming degree.

This lesion occurs twice as frequently in women as in men, occurs at all ages, but more frequently in young adults. It is due to some infection, more often rheumatic. Although a certain number of cases of mitral stenosis have no clinical relationship to rheumatic fever, yet these cases have uniformly shown the same pathology as those associated with a rheumatic history. For example, in Peking, China, mitral stenosis is the most prevalent valvular disease, although rheumatic fever is rarely seen. Other

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etiological factors are diseased tonsils, grippe, exanthemata and pneumonia. Infection occurs often without memorable symptoms so that a long time may elapse between infection and cardiac involvement.

In considering the pathology of mitral stenosis, it should be remembered that in the normal heart the blood flows unobstructedly from the left auricle into the left ventricle and no audible sound is produced during its passage. When structural changes are present in the valves which thicken its cusps or form adhesions of the leaflets, a state of obstruction takes place. These changes throw an excessive burden on the right heart, which, in its endeavor to maintain the circulatory equilibrium, becomes hypertrophied. This is relatively more pronounced in the right ventricle. These changes have been found in many cases which have not given any symptoms of heart failure as proved by Cotton.

Physical signs of mitral stenosis are usually found long before any symptoms of cardiac failure appear. The apex beat may be seen in the midclavicular line, a thrill is felt over the apex and a diastolic shock may be felt over the base. Percussion elicits little enlargement to the left. Oftentimes, enlargement of the left auricle can be made out. There is, however, definite enlargement to the right of the sternum.

The murmur in mitral stenosis is set up by the flow of the blood from the left auricle into the left ventricle through a constricted mitral valve. The smaller the constriction the greater must be the velocity of the blood to produce the murmur. That is why some cases present the murmur only after exertion when the flow is stimulated. As the orifice becomes more constricted a lesser velocity of the blood is required to produce the murmur, and then it is heard all the time. The murmur is also heard with greater intensity in the recumbent position. These changes give a fair appreciation of the severity of the lesion.

The murmur is diastolic in time, low pitched and rumbling, and attains a crescendo character just before merging into systole, which is due to additional push given the current by the contracting auricle. The murmur is generally spoken of as presystolic. That the high pitch which the murmur attains is due to the contraction of the auricle is evidenced by its disappearance when the latter is in a refractory state, as in auricular fibrillation. The first sound may be accentuated or snapping as a result of futile contractions of the ventricle in the presence of insufficient blood. When the ventricle has enough blood there is a pushing element to the apex. In much advanced constriction of the valve a middiastolic murmur can be made out which is diminuendo in character giving place to the presystolic murmur. This murmur persists during auricular fibrillation when the auricle is paralyzed. Another murmur, diastolic in time, known as the Graham Steele murmur, is said to be heard over the second left interspace. It is produced in well advanced cases as a result of dilatation of the right auricle, conus arteriosus, and pulmonary ring.

Mitral stenosis gives rise to cardiac irregularities, such as auricular fibrillation, paroxysmal tachycardia and heart block as a result of tissue changes in the heart muscle.

The symptoms of cardiac failure in mitral stenosis are not as much a result of valvular changes as the inability of the heart muscle to maintain the circulatory equilibrium This is owing in part to disease of the heart muscle itself and to exhaustion of the heart on account of constriction of the mitral valve.

Even before actual symptoms of cardiac failure appear the patient becomes weak, anemic and undernourished because of insufficient blood supply to the body. The earliest symptoms are those of disturbed pulmonary circulation, characterized by dyspnea, cough and expectoration occasionally tinged with blood. Bronchitis is an early symptom and hemoptysis is not uncommon. Sometimes these signs are mistaken for pulmonary tuberculosis. Dullness in the upper left chest may be at times made out, due to large left auricle. As the disease advances still further there is dilatation of the right ventricle with relative tricuspid insufficiency and venous engorgement. This condition may lead to epistaxis, gastric and intestinal symptoms with pain over the liver due to enlargement of the organ. In extreme cases liver pulsations appear and the veins in the neck become prominent.

Hoarseness due to pressure upon the recurrent laryngeal nerve may occur. Ortner first described this condition in 1897; since then a number of cases have been reported by other investigators. I have not met with such complications in my cases. Thrombosis is not an infrequent complication, especially when there is auricular fibrillation. This frequently occurs in young persons and is often responsible for the occurrence of cerebral embolism. Secondary nephritis due to venous and embolic infarcts is frequent.

Statistical studies show that the average age of death from mitral stenosis is thirty-five years. Owing to associated diseases of the heart muscle, the prognosis is unfavorable. When the disease is progressive, complete compensation cannot be established.

In a series of twenty-three cases of mitral stenosis in my practice, tabulated during 1923 and 1924, I wish to emphasize some data bearing upon their history and etiology. There were seven males and sixteen females. The ages varied between twenty-one and forty-five.

Two cases gave a history of definite rheumatic infection. Three gave a history of scarlet fever and diphtheria. Five gave a history of diseased tonsils, grippe and pneumonia. Four gave no definite history of infection, but that of gastrointestinal disturbance.

It is interesting to note that in two cases the family history was that either father or mother or both had heart disease or died of it. Four cases gave a family history of either a brother or sister being affected by heart diseases.

For obvious reasons, not all cases can be presented in this paper. I have, therefore, selected three cases, which, to my mind, illustrate mitral stenosis in its mildest and severest forms.

Case I.—Mrs. S., twenty-two years old, married, one child, nine months old, came for treatment October 9, 1923. Mother died of heart disease when patient was young. She never had any serious illness. Does not remember childhood diseases. Had mild attack of influenza during epidemic. Since birth of baby she felt weak, was short of breath, and felt tired. The condition was affected by the weather.

Bowels were regular. The patient coughed occasionally.

On examination, patient appeared quite robust, high color in the face with signs of dyspnea. Tongue was clear. Lower teeth showed pyorrhea. The throat was congested and presented large, cryptic tonsils. The chest was well formed, of good expansion. Apex beat seen in the fifth interspace in midclavicular line. Palpation elicited a thrill over the apex. Percussion gave evidence of enlargement of cardiac area to the right. Auscultation elicited a presystolic murmur, of rumbling and crescendo character. The first sound was well accentuated, so was the second pulmonic. There was no evidence of any venous engorgement nor pulsation of vessels in the neck. Heart sounds regular, of good quality. Lungs presented evidence of mild bronchitis. Abdomen negative. No evidence of edema. Pulse 90-regular, good quality. Blood pressure 125-70. Urine negative. Hemoglobin seventy per cent. A diagnosis of mitral stenosis with relative mitral insufficiency was made. Fluoroscopic study confirmed findings.

Treatment consisted of removal of tonsils and correction of teeth, with instruction as to exercise and diet. She was under periodical observation until October 10, 1924. All dyspnea disappeared. The pulse ranged between 76-80. She attended to her ordinary housework without difficulty and was discharged October 10, 1924. Patient has since been seen and is in good health.

Case II.—Mrs. D., aged forty-seven, came under observation November 20, 1923. Does not remember childhood diseases. At age of twenty-five had attack of rheumatism from which she completely recovered. Married at thirty, gave birth to two children. First birth uneventful. After birth of second child was confined to bed a few months with heart trouble. Apparently recovered but remained weak.

On examination, patient appeared dyspneic. Face pale with dusky patches over cheek bones. Lips slightly cyanosed. Mucous membranes of mouth bluish. No teeth. Throat presented some dryness, otherwise negative. Chest of good expansion. Apex beat not seen. No pulsations were evident. Palpation elicited a faint thrill over the apex. Apex beat seen in the fifth interspace in about the midclavicular line. Percussion presented a moderate amount of cardiac enlargement to right especially. Auscultation elicited a rumbling murmur over the apex, crescendo in character, heard at the end of the diastole and heard more distinctly in the recumbent position. There was accentuation of the second aortic. Abdomen negative. Liver edge well defined on palpation. The lower extremities presented some varicosis, no edema. The pulse was 100-full and throbbing. Blood presure 180-90. Hemoglobin sixty per cent. Urine, specific gravity 1025. Goodly traces of albumin, no sugar. Occasional red cells, no pus.

Fluoroscopic examination of chest confirmed clinical findings. On the strength of her history, clinical findings and fluoroscopic study, I made a diagnosis of chronic valvular disease, characterized by mitral stenosis with a secondary nephritis.

After some rest in bed and exhibition of digitalis, patient felt better. The kidney condition improved and blood pressure came down. Attacks of paroxysmal tachycardia developed, however, which were readily relieved with quinidin. The pulse, however, did not come down lower than 100.

Case III.—Mrs. B., aged thirty-five years, married, two children. Had influenza three years ago. Came under observation December 6, 1923, complaining of shortness of breath, inability to do any kind of work, pain in upper right quadrant of abdomen, headaches, poor appetite, general weakness and insomnia. Bowels constipated. Lower extremities edematous. Impaired vision. Annoying cough.

On examination, patient cyanotic, dyspneic. Teeth poor. Tongue coated. Throat congested with evidence of one, large, apparently diseased tonsil. Neck negative. Apex beat seen in sixth interspace well to the left of midclavicular line. A pronounced thrill felt all over precordia with a shock over the base. Percussion presented a very large area of cardiac dullness both right and left. Auscultation elicited a loud, rumbling sound, heard over the entire precordia. Another murmur was heard within a circumscribed area over the apex, diastolic in time. Accentuation of the second pulmonic. The lungs presented râles all over, giving evidence of bronchitis. The abdomen was rather tense and very tender over the liver which was palpable about four finger breadths below costal arch. The spleen was palpable and tender. There was no evidence of edema or fluid. The lower extremities were edematous. The pulse was sixty, irregular, sluggish. Blood pressure 135-90. Hemoglobin seventy-five per cent. Blood count was 3,800,000 red, 8,000 white, polymorphonuclear 60. Urine negative.

Fluoroscopic examination showed much peribronchial infiltration at the hilus. The cardiac shadow was large, both right and left. The apex, peak shaped, merged with the diaphragm but could be made out on deep breathing. The heart was slow. The mediastinal spaces not very clear. I made a diagnosis of heart failure due to mitral stenosis with relative insufficiency and partial heart block.

After prolonged rest in bed and exhibition of large doses of digitalis, patient improved. Tonsils were removed and teeth corrected. Two months later patient got an attack of acute articular rheumatism involving the right elbow and knee joints with an inflamed throat. Large doses of salicylates afforded some relief but condition lapsed into a subacute state. Cardiac decompensation with auricular fibrillation set in and her urine showed albumin and casts and blood. Digitalis, diuretin and camphor served to control the situation. Patient began to mend and was comfortable. On April 10, 1924, patient was suddenly seized with severe pain in right leg with cramps in the calf and chills.

Examination of leg showed it white and cold below the knee, with rapidly setting in gangrene in the toes. A diagnosis of thrombus formation in the popliteal artery was made. The leg was amputated above the knee. Patient recovered from the operation, but died five weeks later from heart failure.

By way of summarizing, it seems obvious that Case I presents a condition of mitral stenosis which was probably purely valvular with little or no involvement of the myocardium.

Case II gives evidence of some degree of myocardial involvement characterized by arrhythmia and frequent attacks of paroxysmal tachycardia.

Case III shows a preponderance in involvement of the myocardium characterized by lost compensation with auricular fibrillation and partial heart block with secondary nephritis and thrombus formation.

A word or two as to the management of mitral stenosis: In a given case with few signs of heart failure, the diagnosis being established, the attention of the physician should be centered upon the conservation of the heart muscle. With that in mind, it becomes clear that all sources of infection must be located if possible and removed.

Teeth, tonsils and sinuses should receive consideration. The gastrointestinal tract should be closely surveyed, for we know not as yet what selective effect the toxins in the gastrointestinal tract may have upon the valves and myocardium. The possibility of colitis, chronic appendix, gallbladder disease, gastric ulcer, chronic constipation and pelvic disease should be borne in mind, and, if such condition is discovered, it should be judiciously treated. Digitalis, of course, is the drug par excellence in heart failure, and its effect in establishing equilibrium is permanent. But if the causative conditions prevail; the disease will progress despite the drug, with recurrent attacks of heart failure.

The patient should receive intelligent supportive treatment. A proper diet is probably the most important feature, especially in the presence of renal complications. Comprehensive and detailed instructions should be given by way of rest, exercise and hygiene.

With such management, I believe, that in some cases of mitral stenosis with valvular involvement, progressive myocardial changes could be prevented, and, in some cases, where the myocardium has become affected, further progress of the disease could be arrested and the life of patient prolonged.

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Auricular Flutter

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Auricular flutter is a disorder of the mechanism of the heart beat in which the impulses governing contraction originate in some ectopic focus of the auricle instead of at the sinoauricular node at an extremely rapid rate varying between 200 and 350 a minute. Although the rate is rapid in this condition the rhythm is regular, differing in this respect from auricular fibrillation. On account of the extremely rapid generation of the impulses in auricular flutter the ventricles are unable to respond at the same rate and a type of heart block is developed wherein the ventricles beat at a rate of one quarter to one half that of the auricles. We thus get a two to one, three to one or four to one rhythm, as it is called, which can plainly be seen on the electrocardiogram. For example, suppose the auricles are contracting at the rate of 300 a minute and the ventricular rate is only 150 a minute we can see on the electrocardiogram two P waves for every Q R S-T complex; in other words, a two to one rhythm is present. It is important to note that the rhythm of the ventricles is also perfectly regular.

Digitalis is the specific remedy in this type of abnormal heart condition and it acts by first changing the flutter to auricular fibrillation and then normal rhythm may return.

It is important in the first instance to give enough digitalis to bring about these changes in a reasonably short period of time.

On account of its rather grave significance in most cases, it is important to recognize auricular flutter when present so that proper treatment may be instituted without delay. A positive diagnosis can be made only by the electrocardiogram but in a person suffering from cardiac failure with an extremely rapid though regular ventricular rhythm, the possibilities of the presence of auricular flutter should always be considered.

A rather typical example will now be outlined showing the importance of early diagnosis and treatment as a life saving measure.

Case.—A few days ago I received an urgent call to a distant city to see a lady fifty-one years old. I found her suffering from signs of cardiac decompensation with complete exhaustion. She was cyanotic and her liver and abdomen were distended, there being present a certain amount of ascitic fluid. It was said that she had had a very rapid heart for a long time; that two months before this time she had collapsed and since then had been confined to bed, and was extremely nauseated. Previously she had been well and unusually strong. Apparently no definite diagnosis had been made. It was casually remarked that her heart rate could not be counted, and it was, indeed, difficult to count but it proved to be 216 to the minute and regular. Digitalis had been given casually in the form of the tincture, ten to twenty minims at a time. Of course the situation was a desperate one and the nature of auricular flutter, which was more than likely present, and its specific treatment were duly explained. It was also mentioned that the administration of digitalis is not contraindicated when nausea is present in such a case, though in this instance it would be advisable to give it intravenously or intramuscularly.

The treatment of such a person without the presence of a cardiologically trained nurse or physician was, of course, a crude undertaking, since the proper use of digitalis without delay constituted the woman's only chance of recovery.

The advantage of a scientific knowledge of auricular flutter is the realization that the heart is not condemned as a whole, but the blame is to be placed chiefly upon the auricle where it belongs, and we seek to remedy the trouble at this source. The lady described above had evidently been treated under the impression that she was suffering from a rapid heart, symptomatic of some general disorder. The estab-

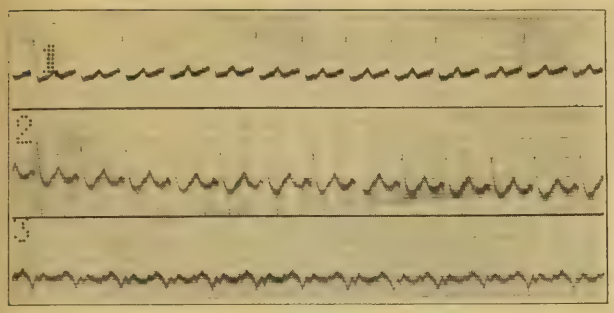

Fig. 1.—Auricular flutter untreated.

lishment of this distinction between symptomatic tachycardia and tachycardia of specific cardiac origin constitutes an important function of the cardiologist. Upon this differentiation must often depend the recognition of auricular flutter after an operation and it may dispel the fear of infection as the cause of a rapid heart. This often averts unwise surgical interference.

In this patient two ampoules of digifoline were at once injected intramuscularly, followed every four hours by a single ampoule, and instructions were given that this treatment be carried on until eight ampoules in all had been injected, at which time it

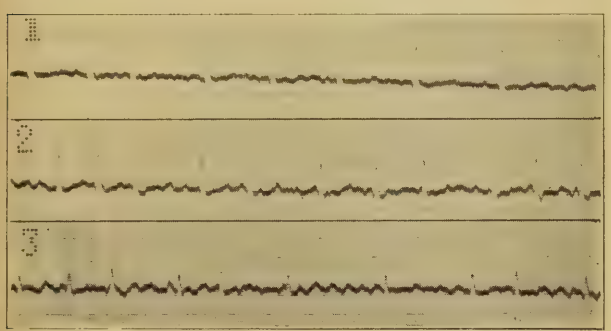

Fig. 2.—Auricular flutter two days after digitalis treatment was instituted, showing typical auricular fibrillation.

would be advisable to have another conference concerning the problem of her cure. It was predicted that, if things went well, the heart would become irregular and assume the classical picture of fibrillation—first, a rapid irregular pulse and later a slow irregular pulse, and finally the resumption of normal rhythm. At about the time the eighth ampoule had been given, representing twelve gr. of digitalis in all, the pulse rate fell to 140 and was completely irregular. The dose was then reduced to three ampoules in twenty-four hours with the advice that

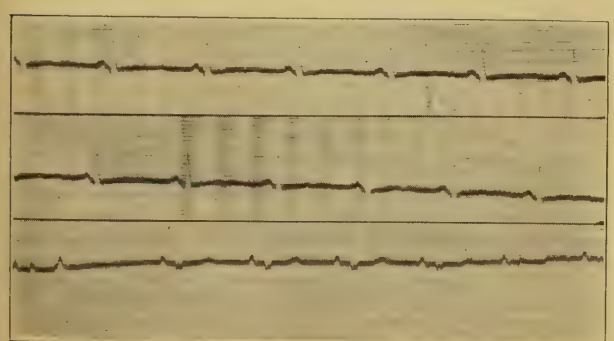

Fig. 3.—Three days later showing normal rhythm.

when the heart rate fell to 90 this dose should be further reduced. Coincident with the control of the heart the whole clinical picture changed. The nausea and vomiting disappeared, the woman gained in strength and developed a voracious appetite. In this instance the heart, arteries and kidneys were appar-

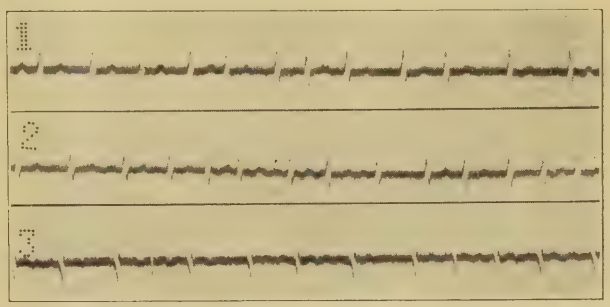

Fig. 4.—A later picture of the patient in the case discussed in the article showing auricular fibrillation.

ently fairly sound and there is no reason why this person should not enjoy fairly good health with a controlled fibrillation or possibly with complete restoration of rhythm.

The practice of cardiology is fraught with many perplexities and discouragements. So it is with keen joy that one is able to record an instance where the recognition of the true nature of a disorder of the heart resulted in as brilliant an achievement in the saving of human life as if a surgeon had operated upon a ruptured appendix or a bleeding ectopic pregnancy. Great credit is due Sir James MacKenzie and his pupils who have given to the world this precise knowledge of the heart beat without which this woman would have lost her life. Unfortunately it was not possible to get electrocardiographic records of this case of auricular flutter when first seen, but for the sake of reference, records are herewith in-

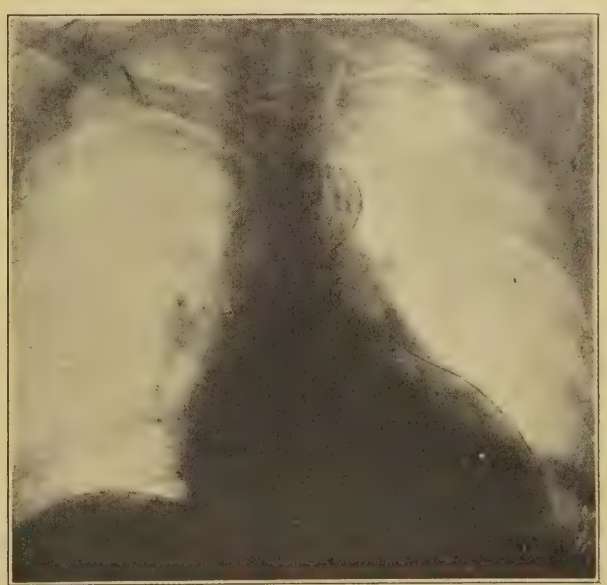

Fig. 5.—X ray of the heart of the patient shown in Fig. 4.

cluded of a gentleman showing a similar condition, also an x ray of the patient's heart and an electrocardiogram taken from her at a later date, when she was fibrillating, but up and around and quite happy.

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The Direct Treatment of Heart Failure*

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In treating heart failure we have to lessen the work of the heart and improve its nutrition by giving rest, removing sources of toxic irritation and regulating diet and exercise, and also often we have to improve its action in a more direct manner. The agents used in this direct treatment are generally classed as heart stimulants, but it seems logical to separate them into two groups, the first comprising those which act directly on the heart muscle to increase its intrinsic property of contractility and allied property of tonicity, and the second comprising those which improve the heart's action by exciting activities that facilitate the proper functioning of the heart or nullify or modify activities that interfere with its proper functioning; and to reserve the term heart stimulant for those in the first group, applying the term heart regulator to the others. This differentiation of heart stimulants and heart regulators has clinical significance because in the direct treatment of heart failure we find that some cases require particularly increase in contractile energy of the heart muscle, while others call for removal of the impediment of an arrhythmia or for special activity of the nervous mechanism controlling the heart. Let us briefly review some of the more important of these agents.

DIGITALIS

We will speak first of digitalis, which is the most celebrated of them all, the most extensively used, and we might add, the most abused. Digitalis has been known to medicine for a long time, and has been the subject of much clinical and laboratory study, but our knowledge of its action is not altogether satisfactory, and differences of opinion exist regarding it. That it acts in two ways, directly on the myocardium and indirectly through stimulation of the vagus nerve—directly to increase the excitability and depress the conductivity of the myocardium, and indirectly through stimulation of the vagus to depress the myocardial functions generally—is pretty well established; but that it has a direct effect on the myocardium to increase its contractility and tonicity remains in dispute. Stevens says that digitalis increases contractility and tonicity (1), and this opinion seems to be held by many; but Lewis (2), Mackenzie (3), Vaquez (4) and others appear unable to find that it has any such direct effect. Hale White says that it increases contractility in frogs but not in mammals, and that in mammals poisoned by digitalis the heart stops in diastole, and he suggests as an explanation that the depressing vagus effect predominates in mammals (5).

Accepting, subject to revision on further evidence, the negative decision of the disputed question of the direct action of digitalis on contractility and tonicity, we find that this drug conforms to the definition of a heart regulator rather than to that of a heart stimulant. Acting directly on the myocardium and indirectly through the vagus, it lessens the ability of the heart muscle to transmit contractile impulses, and this effect, intensified by specific doses to the extent of producing partial heart block or notably delayed conduction, can free the ventricles from the impediment to their proper action presented by the arrhythmias known as auricular fibrillation and flutter. It may also be possible for it to act beneficially in some cases of heart failure with normal rhythm when, in nonspecific doses, it slightly slows the heart and prolongs its diastole and relaxes its musculature; thus favoring fuller filling of the ventricles, increased circulation in the coronary arteries and a larger output from the ventricles; provided that the ventricles are in a condition to respond to the stimulus of increased blood supply and distention; but if by reason of intrinsic disease the ventricles are not able to respond, then the giving of digitalis makes for a pathological dilatation or in increase of an existing dilatation, as has been pointed out by Vaquez. This action of digitalis to improve the circulation by relaxing the heart appears to be a justification of its so-called tonic use. Its regular or specific use would seem to be limited to cases of heart failure with auricular fibrillation and flutter, in which it is given to relieve the ventricles from the impediment of the arrhythmia. But in cases of auricular fibrillation with much degeneration or dilatation of the ventricles, the release of the ventricles from the impediment of the arrhythmia may not be sufficient to bring about notable improvement of the circulation; and this observation, which has been made, favors the view that digitalis does not directly increase contractility. In conditions of normal cardiac action digitalis in doses within therapeutic limits appears not notably to modify the action of the heart or the circulation, probably because the natural compensatory mechanism nullifies the disturbing effects of the drug. In some cases with regular rhythm the administration of digitalis has been observed by the author to be followed by lowering of the blood pressure and increase of the pulse rate. The whole picture of digitalis action seems to be dominated by its vagus effects.

STROPHANTHUS

Strophanthus has advanced to the front among cardiac remedies in comparatively recent years, but it has not yet succeeded in becoming established as an institution, like digitalis. Its action is thought by many to be the same as that of digitalis, and many consider it a sort of inferior digitalis; and James Mackenzie as late as 1921 said that he could see no difference between the actions of the two drugs (6). But there are good reasons for considering strophanthus a heart stimulant as above defined, that is, as acting directly on the heart muscle to increase its contractility, and thus differing from digitalis. It also appears to act directly on the myocardium to increase excitability and depress conductivity, in these respects resembling digitalis. It apparently does not influence the heart through stimulation of the vagus,

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in this respect differing radically from digitalis. Support of the statement that it does not act on the vagus is suggested by a recent observation of Cushny to the effect that while a rapid heart slowed by digitalis recovered part of its former rate after administration of atropine to block the vagus, a heart slowed by strophanthin showed no increase of rate after administration of atropine (7). In regard to the statement that it directly increases contractility may be quoted Vaquez, who says that strophanthin becomes "fixed in the myocardium after the manner of a stain or a toxin" (8), in consequence of which the contractile power of the muscle is increased. With lethal doses the heart is found rigidly contracted and empty. Strophanthin is rapidly used up in the body and cannot be recovered in any of the excretions. Vaquez calls it the "heart medicine par excellence." Hare says that strophanthus acts as a stimulant to the heart muscle, but does not slow the heart by an action on the vagus (9). It apparently acts by contact and leaves the heart in systole after death from its use.

Clinical observations in an extensive use of strophanthus during many years incline me to accept the view that strophanthus is a heart stimulant and acts differently from digitalis. More than twenty years ago, in 1905, I recorded my opinion that "in uncompensated valvular disease in which the prognosis is bad as regards recovery of compensation strophanthus acts better than digitalis. And in dilatation from any cause where the prognosis is bad strophanthus is usually better than digitalis" (10).

LESSER HEART REMEDIES

Besides the two agents above mentioned there are others which are used in the direct treatment of heart failure, most of which belong in the group of heart regulators. Among these "lesser" heart remedies the following are selected for notice.

Quinidine is a heart regulator which seems able to remove the impediment to the proper action of the ventricles presented by auricular fibrillation in a considerable proportion of the cases, but there are serious drawbacks to its general use.

Atropine is a heart regulator which can block the vagus, but its usefulness in the treatment of heart failure is comparatively small.

Strychnine has a well deserved reputation in the treatment of heart failure, especially in cases occurring in acute infections and in ambulant cases with restricted activity. It is apparently a heart regulator which acts by stimulating nerve centres and increasing the secretion or the effectiveness of adrenalin. Its most particular use is in conditions with low blood pressure.

Caffeine has been considered a heart stimulant, but proof that it directly increases myocardial contractility seems to be lacking. It variously affects the rate of the heart through stimulation of the vagus and sympathetic systems, and seems sometimes to raise the blood pressure after a preliminary lowering of it. It also stimulates respiration. It notably stimulates the higher cerebral centres, increasing mental activity in moderate doses and causing confusion of thought in excessive doses; and it stimulates the kidney excretion. On account of the disturbances of the nervous system which it produces, it should be used with caution.

Adrenalin is a vasoconstrictor with an established reputation among heart regulators, although its general usefulness in heart failure is not as great as might be inferred from the definiteness of its action.

Nitroglycerin and amyl nitrite are vasodilators, and as such are capable of lessening the load of the laboring heart, and thus appearing as heart regulators, but they are rarely used for exactly that purpose, as Nature in most cases can make such adjustments along the line of their action for that purpose as the circumstances require or permit. The indications for the use of nitroglycerin are chiefly to relieve distressing or dangerous symptoms due to local arteriosclerosis or spasm, and to lower the general blood pressure when its continuance at the existing height threatens destructive accidents to the circulatory apparatus, particularly the arteries. It may help to free the circulation in vitally important regions of the body, as the heart and brain, when the supplying arteries are unduly contracted and especially when high blood pressure coexists. The main contraindication to its use is low blood pressure, and in general, it should not be given if the pressure is below the normal for age and condition: the necessity for maintaining the existing pressure may be more urgent than the indication to relieve the load of the heart.

Calcium, being necessary to muscular contraction, can be considered a heart stimulant when administered in cases of calcium deficiency, which should be looked out for and guarded against in cases of heart failure.

Morphine should be included with the agents employed in the direct treatment of heart failure, being a heart regulator through its sedative effect on the nervous system. In certain phases of the condition it is indispensable. It is of great value in pulmonary edema. Given in small doses at regular intervals with digitalis or strophanthus, or in larger single doses, it may be effective in relieving dyspnea. When arteriodilators fail to relieve in angina pectoris, then recourse must be had to morphine. It alone can relieve the prolonged agony so often present in the final stages of progressive heart failure.

A mechanical procedure which has a place with the heart regulators used in the direct treatment of heart failure, particularly in the acute failure of the right heart, is bleeding.

PRACTICAL USE OF HEART STIMULANTS AND HEART REGULATORS

In speaking of the practical use of heart stimulants and heart regulators in the direct treatment of heart failure, I realize the impossibility of presenting the subject in a systematic and conclusive manner: because of the great variety of indications for these agents presented by the different cases, because the use of these agents has not been standardized, and because of the differences of opinion that exist regarding their use: there are those who use digitalis for a direct heart stimulant and always in full, specific doses; there are those who do not use strophanthus at all, or if they do, try to use it like digitalis and always in large doses; and there are those who speak slightingly of strychnine: and there is diversity of opinion as to dose and administration, some believing that digitalis should be given regularly in massive doses to produce quick digitalization, while others hold that it is a better procedure to secure

therapeutic saturation with the drug more gradually, by the use of smaller doses longer continued, in order to safeguard against excessive toxic action being precipitated by pathological changes in the heart. In view of these confused conditions I shall not attempt to discuss the subject in general or the opinions of others, but will confine my remarks to a few words on the treatment of certain types of heart failure from the viewpoint of my own experience and opinions.

Cases of heart failure can be differentiated to a certain extent into types, as acute, recurrent and progressive; and as predominantly of the right heart and of the left; and as due to myocardial weakness or to an impeding arrhythmia, or to nervous or vascular disturbances. It is a matter of practical interest that failure predominantly of the right heart is characteristic of mitral valve disease, while failure predominantly of the left heart is characteristic of aortic valve disease and conditions producing high blood pressure; and that in the former group of cases auricular fibrillation is likely to develop, while it is much less common in the latter: for which a reason might be found in the fact that the comparatively thin walled left auricle is under special strain in mitral disease and thus predisposed to the changes which bring about auricular fibrillation. In the right heart failure of pneumonia, however, the myocardial weakness develops in the heart muscle itself or against a resistance in the pulmonary circuit, and the left auricle is not subjected to the same strain as in mitral disease; and auricular fibrillation is not so regularly seen in this form of right heart failure. And in the failure due to acute and chronic degenerations affecting either ventricle auricular fibrillation is not so regularly seen.

A commonly observed type of right heart failure is that of mitral stenosis with auricular fibrillation. In the treatment of the cases of moderate severity digitalis is given to the extent of producing beginning toxic symptoms. The author gives the equivalent of fifteen minims of an active, standardized tincture three or four times daily until toxic symptoms appear, which is usually not later than the fifth or sixth day and may be earlier, depending on the pathological changes in the myocardium; and then, either immediately or after an interval of rest, the drug is continued with a daily dose of fifteen or twenty minims, or whatever dose proves necessary to maintain the degree of saturation suitable for the case.

In the severe cases of right heart failure, especially those with much dilatation, occurring in mitral disease, strophanthus is the preferred remedy, at least at first. I usually begin with giving an amorphous strophanthin in doses of 1/250 gr. or less every four hours until relief is obtained or a stated number of doses has been given, and continue it in doses of 1/500 gr. or less every four hours. After improvement has taken place digitalis may be tried in place of the strophanthin, and continued if the results are favorable. But digitalis sometimes fails to improve the condition, especially if there is much myocardial degeneration and dilatation, as in the following case, in which the patient did better on strophanthin throughout.

Case I.—A woman of forty-seven, with a double mitral lesion, had recurrent attacks of right heart failure which were successfully treated with strophanthin as above described, digitalis having been tried without benefit. In one of these recurrent attacks she had severe pulmonary congestion with pneumonia of heart disease, great enlargement of the liver, extensive edema of the lower extremities and marked renal congestion. She was confined to her bed for seven months, but finally recovered a sufficient degree of cardiac compensation to be able to go up two flights of stairs without distress and to take a trip to Venezuela and back. She maintained her compensation for five years by taking three or four times daily under the tongue 1/500 gr. of the strophanthin.

In progressive failure of the right heart in mitral disease strophanthin and digitalis may each be tried, and the one which seems to produce the best results continued, but strophanthin should be tried first, as it has no cumulative effect and does not interfere with the subsequent giving of digitalis. If the heart has already been digitalized, the administration of strophanthin is dangerous, because the actions of the two drugs overlap in the matter of depressing conductivity, and the strophanthin might increase the depression of conductivity already present so as to precipitate severe heart block.

In failure of the right heart occurring in the acute infections strophanthin may be given, and when the condition is extreme, it should be given in special dose, as in the following case.

Case II.—A young man in the fifth day of a lobar pneumonia jumped out of bed in delirium and acute right heart failure developed with dilatation, very rapid and feeble pulse and extensive pulmonary edema. He was given 1/100 gr. of the amorphous strophanthin by intramuscular injection and recovered.

In any case of acute heart failure showing dangerous symptoms the dose of the strophanthin may be 1/100 gr. and it is best given intramuscularly or intravenously; but this dose is exceptional and should not, as a rule, be repeated inside of twenty-four hours.

Along with the use of strophanthin in acute failure of the right heart, bleeding would seem to be good treatment in very severe cases with extensive pulmonary edema and cyanosis; and the use of morphine in the treatment of acute pulmonary edema recommends itself.

Failure of the left heart more regularly than that of the right calls for strophanthin in preference to digitalis, auricular fibrillation being much less common in left heart failure. It has been noted that in total cardiac failure the failure of the left heart is likely to predominate, especially when the failure develops suddenly. In chronic progressive failure of the left heart, such as is seen in aortic valve disease and in conditions of long continued high blood pressure, strophanthin is an effective remedy, given in doses graded to suit the degree of the heart failure; and in ambulant cases which are on the verge of failure, it may be of great value as a safeguard, given in small, continued doses, as 1/2000 gr. or 1/1000 gr. of the amorphous strophanthin every four hours, sublingually.

In the heart failure of acute and chronic myocarditis without auricular fibrillation or flutter, strophanthin is generally indicated. In these conditions strychnine is often useful as an adjuvant; and in conditions of potential failure the strychnine may be

given before the strophanthin is needed; strychnine is especially useful for combatting the tendency to low blood pressure; it should be given, as a rule, in doses not exceeding 1/60 gr. every four hours.

My plan of treatment for the failing heart of pneumonia includes the use of strychnine sulphate, 1/60 gr., every four hours at the first sign or suspicion of heart failure, or if the blood pressure is extremely low; and if the failure becomes evident, of the strophanthin in addition, usually in doses of 1/1000 gr. to 1/500 gr., every four hours, and in severe cases, of 1/250 gr. every four hours. In acute cardiac dilatation a single dose of 1/100 gr. may be given as before described. Calcium chloride or an equivalent calcium salt, is given to the amount of ½ dr. daily.

That a definite action on the heart and circulation can be secured by what seem to be very small doses of the amorphous strophanthin has been noted by the author. An elderly physician with influenza and a very low blood pressure and signs and symptoms of potential heart failure while in bed, testified that he could feel the good effects on his heart and circulation of 1/2000 gr. taken every four hours sublingually.

I wish especially to emphasize the necessity of giving strophanthus in proper doses. It was only after he had learned the proper doses that he was able to get the very good results from it which he is able to report. The dose of this drug is not, as is that of digitalis regularly specific and measured by the lower limit of toxic effect, but it varies according to the degree of myocardial failure relative to the circulatory requirement in each case. It may well be largely due to the fact that many of those who have used strophanthus have given it in excessively large doses, following, indeed, recommendations in the text books, and to the fact that many have tried to use it like digitalis, that this most valuable remedy has failed to secure the universal appreciation to which its merits would seem to entitle it. The best preparation is strophanthin, of which there are two main varieties, amorphous and crystalized; and it is well to use one strophanthin regularly and to become familiar with its dosage; and particularly important is it not to use a crystallized strophanthin in the same dose that has been found proper for an amorphous strophanthin. It should always be given sublingually, hypodermically, intramuscularly or intravenously; in a large proportion of cases sublingual administration is satisfactory; it should not be given by mouth to be swallowed. It is also possible to get good results with the tincture, as I have abundantly observed in the past; but with strophanthin the tincture may be discarded.

Among those who have done much in recent years to advance the therapeutics of strophanthin is Henri Vaquez of Paris. He prefers the crystalized strophanthin known as ouabain, which he gives in acute heart failure as follows. He gives intravenously, ouabain, 1/240 gr. every twelve hours for three doses, and after an interval of twenty-four hours a fourth dose, so that the patient gets one milligram in forty-eight hours. In chronic cases he may give one fourth of a milligram daily for eight or ten days.

In concluding I select for emphasis the following statements:

As a guide to the use of digitalis in heart failure laboratory experimentation, especially on animals, cannot altogether be trusted, as Mackenzie has said, because pathological changes in the human organism can modify the effects of the drug and discredit inferences from such experimentation; clinical experience must largely determine its practical use.

Clinical experience has shown that digitalis is a remarkably effective remedy in conditions of heart failure with dropsy, and a large proportion of these cases suffer from auricular fibrillation. And we have a reasonable explanation of how digitalis acts to improve the circulation in auricular fibrillation, viz., by removing through depression of conduction the impediment to proper ventricular action presented by the arrhythmia.

That digitalis by direct action increases myocardial contractility and tonicity in humans has not been satisfactorily proved; the contrary would seem to be an inference from the fact that with a lethal dose the heart stops in diastole. That it can improve the circulation in certain cases with normal rhythm indirectly, however, by relaxing the cardiac musculature and thereby favoring increased coronary circulation, fuller filling of the ventricles and an increased output from the ventricles seems probable.

When given for relief in auricular fibrillation the dose should be specific, that is, pushed to the production of beginning toxic effects.

There are three factors which determine the effects of digitalis, the size of the dose, the size of the patient's body, and the pathological conditions in the patient's body, particularly his myocardium; the last factor would seem to make impossible absolute standardization of the specific dose: a dose that would produce mild toxic symptoms in one patient might produce severe toxic symptoms in another patient of the same size whose myocardium was more diseased.

Strophanthus is an effective and powerful heart stimulant which acts, it would seem, directly on the heart muscle to increase its contractility, and not at all on the vagus mechanism. It parallels digitalis in action in the matter of increasing the excitability and depressing the conductivity of the myocardium, but it differs from digitalis in action so radically in other respects that it cannot be considered as a substitute for that drug, but rather as an independent ally, useful in many cases of heart failure where digitalis is not indicated or is less efficient. It is useful, indeed, wherever a direct heart stimulant is needed. But to get good results from its use it is essential that the dose be properly adjusted: the ideal dose is the smallest practicable, and excessively large doses should be avoided. The best preparation is strophanthin, and it should be administered sublingually, hypodermically, intramuscularly or intravenously. A small percentage of patients show a gastrointestinal idiosyncrasy to strophanthus.

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The Pupil as an Index of Activity in Cardiac Lesions

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Since publishing the results of my studies made at Fordham University on the Afferent Relations of the Skin and Viscera to the Pupil Dilator Mechanism (1) I have had abundant opportunity of verifying clinically my experimental findings. In unilateral somatic lesions below the level of the umbilicus the contralateral is the smaller pupil so long as the patient is quiescent and free from pain but it at once becomes larger than its fellow when the patient becomes disturbed or is in pain. In one sided somatic lesions above the level of the umbilicus (trunk, arm, head or neck), the pupillary changes are observed in the homolateral eye. In the viscera one sided lesion induces pupillary changes like those found in somatic lesions, the crossed or uncrossed effects being determined by the primitive afferent nerve supply. If this latter be preponderately derived from one side of the spinal cord and from a level predominantly cephalad of the umbilicus (tenth thoracic segment) the effects are uncrossed, but if the one sided nerve supply be originally derived from a level predominantly caudad of the umbilicus the effects are crossed. In paired organs such as the lungs the homolateral pupil usually shows the positive (relative dilatation) or negative (relative constriction) phase of what the author has named the pseudoparadoxical dilatation phenomenon (2). In the heart the chambers are really paired organs. Hence lesions of the right ventricle evoke the phenomenon in the right pupil and lesions of the left ventricle and aorta evoke it in the left pupil. In all sorts of cardioaortic disease the phenomenon may be observed. Taken in conjunction with the reflected pain and hyperalgesia which always accompany inflammatory changes in the cardioaortic structures I have found the pupil phenomenon to be, not only a reliable, corroborative, localizing, diagnostic sign, but also a safe guide in therapy. More especially has it been found to be a reliable index in the matter of regulating such important therapeutic measures as exercise and rest. Thus where there is question as to the activity or nonactivity of the lesion the negative phase (relative constriction) plus the absence of spontaneous reflected pain or of marked hyperalgesia would point to nonactivity whereas the positive (relative dilatation) phase plus the presence of spontaneous reflected pain or of acute hyperalgesia would indicate an active lesion. The reflected pain and deep hyperalgesic areas most intimately associated with cardioaortic disease are (on the ventral aspect) those thoracic areas bounding the nipple region, viz., the third and fourth areas cephalad of the nipple in a line drawn from the latter to the middle of the clavicle, the fifth area just lateral of the nipple, and the sixth area just caudad and mesial of the nipple. Areas corresponding to these are also found on the dorsal aspect (Fig. 1). In an active lesion the spontaneous reflected pain is usually one sided and often associated with a more or less intense hyperalgesia (always bilateral) both superficial (tested by the dragged pinpoint or finger nail, etc.) and deep (tested by digital pressure). More usually, however, the hyperalgesia is of the deep variety, the superficial hyperalgesia being absent or confined to the regions overlying the deep hyperalgesic areas. In quiescent lesions the superficial hyperalgesia is altogether absent and the deep hyperalgesia mild and elicitable only by comparatively heavy pressure. In some instances of reactivated lesions, e. g., in "mitral disease," I have seen the left pupil exhibit both phases of the pupillary phenomenon merely on change of posture, thus the active phase (relative dilatation) was present when the patient was sitting or standing and the negative phase (relative constriction) when the patient was lying down. In these cases the left pupil could be made smaller or larger than the right merely by having the patient lie down or sit up. This variation of the phenomenon with changes of posture well illustrates the intimate functional relations between the pupil dilator mechanism and the heart and aorta. The reflected pain and hyperalgesia are also affected by posture and though they do not register their changes as dramatically as does the pupil, they register them effectively.

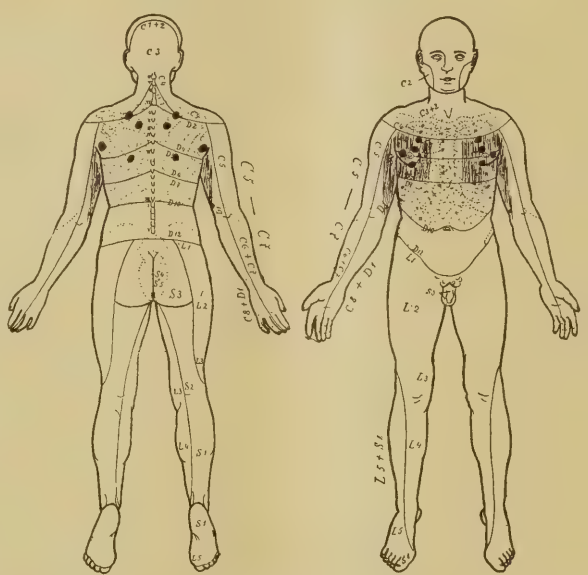

Fig. 1.—Reactivated mitral disease with beginning decompensation. Heavy spots, deep hyperalgesia (on left, cardioaortic areas of reflected pain); linear shading, intense superficial hyperalgesia (fused pulmonic, cardioaortic and gastric areas). In recumbency left pupil smaller than right 3.0: 2:5 mm, but larger 3.0: 3:5 mm when sitting or standing.

Thus in almost any cardiac condition in which reflected pain or hyperalgesia is a feature this tends to disappear in a short time after the patient has been put to bed. And conversely where it has disappeared after a period of rest it tends to reappear when work or exercise is resumed too early or is too arduous or

prolonged; or where the activity period is out of proportion to the rest period, i. e., exceeds the optimum. In cases in which decompensation has set in the reflected pain and hyperalgesia tend to abate but coincident with this the negative (relative constriction) phase of the pupil phenomenon gives place to the positive (relative dilatation) phase. Where compensation is good and in cases with well maintained or even abnormally high blood pressure, the reflected pain and hyperalgesia are usually present only when the patient has been exerting himself or has been unduly excited or is in pain. In these cases the phenomenon follows the general rule, viz., in quiescence the pupil exhibits the negative (relative constriction) phase and in activity the positive (relative dilatation) phase.

In conclusion it must be emphasized that both the pupil phenomenon and the reflected pain and hyperalgesia are merely good corroborative localizing signs of disease and by no means to be depended upon exclusively as to the existence or non-existence of disease in a particular viscus. These matters will be more fully discussed in a communication to follow this preliminary communication.

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Cardiazol, a Heart Stimulant

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A great number of investigators have been working in recent years to determine the value of camphorated oil as a heart stimulant. Lately it has been shown that it is without any effect whatsoever if administered in its ordinary form. Of this fact Heathcote (1), Marvin and Soifer (2) have given conclusive evidence by clinical observation and by animal experiments.

On the other hand, we cannot overlook the fact that good results have occasionally been obtained with this drug. We know that camphorated oil, when brought in direct contact with an animal heart damaged by chloroform, cholin, muscarin, chloral hydrate and other substances, increases the force of the systole and reduces the pulse rate (Cushny, 3).

The reason for this apparent contradiction has been brought out by Schmiedeberg and Meyer (4), who found that camphorated oil is slowly absorbed after subcutaneous injection. As soon as it reaches the blood stream the body tends to inactivate and to eliminate it immediately. It becomes oxidized and combined with glycuronic acid and leaves the organism with the urine as camphor glycuronic acid. Therefore the concentration in the heart necessary for its effect is very seldom reached, and thus the action of the camphorated oil, if any, is very uncertain.

The first attempts to obviate this difficulty were made by Leo (5), who gave camphorated oil intravenously. However, the absolute insolubility of camphorated oil in water necessitated very large infusions of water and therefore prevented the practical application of this method.

In order to obtain a camphorated oil which would be readily soluble in water, Gottlieb and Schulemann (6) produced synthetically a preparation called hexeton or homocamphin. This drug, when given intravenously, is rapidly absorbed and it is maintained that it affords sufficient effect. In its chemical structure it resembles very closely camphorated oil. However, in order to facilitate its solubility it has to be given with twenty per cent. sodium salicylate solution.

Schmidt (7) has tried to eliminate this disadvantage in producing a new preparation called cardiazol. It is obtained by a new method of synthesis by the action of two molecules of hydrazoic acid on cyclohexanon. The preliminary experiments for its production have been made at the Chemical Institute of the Swedish University of Abo, Finland. In its chemical formula Cardiazol differs considerably from camphor. It is a combination of the nitrogen containing tetrazol ring with the pentamethylene group and therefore not related to the volatile oils of the terpene group.

It has been applied recently in European clinics, and the latest reports (Krehl, 7, and Hemmerling, 8), warrant further clinical trials. Its chief indication of application is cardiovascular collapse. It is also asserted that auricular fibrillation and angina pectoris have been benefited by this drug.

The pharmacological studies done by Hildebrandt (7) revealed the following facts: When administered subcutaneously to an animal it is instantly absorbed and exerts its action on the heart within a few minutes. On the frog heart, damaged by chloroform, it increases the amplitude of the systole and slows down the pulse rate. If the heart is previously intoxicated by strophanthin, cardiazol regulates the rhythm. Besides, it stimulates the cardiovascular centres in the medulla and thus increases the blood pressure.

Since only a small trial quantity was at my disposal, only three case reports can be given.

Case I.—B. A., a man fifty-four years old, was seen in auricular fibrillation which had developed in the course of a right side bronchopneumonia. Examination showed marked hypertrophy of the heart, the apex rate being 172, pulse 135, perfectly irregular in rhythm and force, respiration 39, blood pressure 78-47. Marked cyanosis and dyspnea were present. Eight minutes after the subcutaneous injection of cardiazol the patient felt much stronger, his respiration decreased to 32, the heart rate was still irregular, but decreased to 158. Blood pressure rose to 93-54. Digitalis was started later and administered

every four hours. The injection of cardiazol was repeated the next morning when the apex rate was 149. About eight minutes after this injection the heart became regular, no pulse deficit being present. The blood pressure rose to 110.

CASE II.—J. T., a man twenty-nine years old, with bronchial asthma complicated by chronic myocarditis, showed all signs of pronounced lung edema following a three days' asthmatic attack. The heart beat was 197, the pulse could scarcely be felt. The blood pressure was 52 to 31. He expectorated frothy sputum. He showed cold perspiration. Moist râles were heard throughout both lungs, and considerable impairment over both bases of lungs was present. Adrenalin, which had been given frequently, was of no more value. One c. c. of cardiazol administered subcutaneously checked the expectoration of frothy sputum, increased the blood pressure to 65, brought down the pulse rate to 155 within ten minutes. The same day two more injections were given by the nurse, from which considerable subjective improvement resulted until the administered digitalis became effective.

CASE III.—Mrs. R. had had septic tonsillitis, was seen in a stage of pronounced vascular collapse. The respiration was 42, pulse 158, blood pressure 85-32. She was delirious and suffered considerably from dyspnea. Fifteen minutes after the subcutaneous administration of cardiazol the patient felt much stronger, sat up in bed, pulse was 122, and less frequent. Blood pressure 95-47.

SUMMARY

Cardiazol, a cardiac stimulant, has been tried in three cases. The results call for further clinical studies.

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Suppuration of the Nasal Accessory Sinuses as a Portal of Entry of Infection in Diseases of the Heart

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Ever since the infective character of endocarditis has been fully recognized and studied by Winge, Koster, Koch and others, the medical world has been on a constant look out for portals of entry of infection or socalled foci of infection.

With the recognition of the important rôle played by the mucous membrane as a portal of entry of microorganisms in diseases of the heart, came the researches which led to the establishment of the alimentary canal and the genitourinary and respiratory tracts as the chief portals of entry of infection.

The alimentary canal is considered the most common portal of entry of infection. In the mouth the alveolar abscess and necrotic bone changes associated with dental caries are foci of infection. The tonsils have been definitely proved to be responsible for a great many cases of heart disease, particularly in children where we not infrequently meet with cases of endocarditis without recognizable cause. Infections of the bile passages are held responsible for a large number of infections. The appendix although often looked upon as a portal of infection is thought to be an infrequent and even rare focus of infection.

In the genitourinary tract, gonorrhea, prostatitis, cystitis and suppurative processes of the kidneys are common foci of infection.

In the respiratory tract, several primary foci of infection have been recognized; they are the suppurative lesions of the nose and the paranasal sinuses, affections of the larynx and trachea and bronchiectasis. Pneumonia has been recognized as a common cause of heart disease, while suppuration of the pleura is a rare cause.

In the following paragraphs I shall confine my discussion only to the relationship of infections of the nasal sinuses to heart disease and the rôle played by them as a portal of entrance of infection.

Although the importance of suppuration of the nasal sinuses has long been recognized as a focus of infection in diseases of the heart, it is surprising to find from a close survey of literature, that comparatively little has been written on this subject.

Osler (1) refers to the suppuration of the nose and the adjacent sinuses as primary foci of infection in the etiology of acute valvular disease, but does so in a very superficial manner. He, however, stresses the importance of the tonsil as taking the first rank as a source of infection.

In a recent paper Dr. E. Ross Faulkner (2) discusses focal infections in the nasal sinuses. He points out that as foci of infection, the nasal sinuses are extremely frequent, far more frequent than members of the profession are prone to realize. He furthermore says there is no part of the body where a focus of infection may be more securely hidden from detection of the casual observer. It is of no little interest to note the statement by Faulkner that positive blood cultures can be obtained in many cases of acute sinusitis. He mentions a case of meningitis with streptococci in the spinal fluid from a sinusitis,

in which recovery took place after a radical operation on the sinuses.

Joseph W. Miller (3) reports three fatal cases of cardiac disease in which postmortem examination of the nasal sinuses revealed an empyema of one or both maxillary sinuses that was not detected before the patients died. Miller asserts that the involvement of the maxillary sinuses may have given rise directly or indirectly to the cardiac disease.

Daniel S. Dougherty (4) in a recent paper speaks of the nose and paranasal sinuses as sites of foci of infection likely to lead to rheumatism and heart disease.

During the past five years I have had the opportunity of examining and studying a very large group of cases at the clinics of the Beth Israel and the Midtown Hospitals and in private practice. The patients were studied carefully by clinical examinations, laboratory tests, x ray and antroscopic examinations.

It would not at all be exaggerating to state that practically every patient examined showed evidences of sinus infection in some form or another. Only very rarely could we say with any degree of certainty that a case was absolutely free from a diseased process in the sinuses. In antrum infections particularly, where a direct inspection of the lining mucous membrane was made possible by means of my antroscope, were we able definitely to differentiate pathological from nonpathological conditions. By this aid we were also able to study and distinguish all grades of polypoid degenerations, from the very early thickening to the advanced polypoid degeneration of the mucosa lining the sinus.

The x ray examination was a great help to us in so far as deciding whether a sinus was diseased or not. A cloudy plate, however, was found to be no indication of the character of the lesion present. An acutely congested mucosa of an antrum gave a marked cloud on the x ray plate, while extensive polypoid degeneration gave at times a slight diminution in the illumination, the latter depending on the amount of air present in the sinus and whether the natural opening was patent.

In spite, however, of the predominance of sinus disease we infrequently met with a frank or socalled closed empyema of a sinus. Open or discharging empyemas were more frequently met with, but proportionately were also rather infrequent.

In its relation to cardiac disease it is interesting to note that the number of cardiacs found among the patients examined was very negligible. In my private practice I have collected only three cases of cardiac disease associated with sinus infection, where the latter appears to be directly associated with the cardiac pathology, and possibly the focus of infection causing the heart trouble. I have also collected a group of cases with empyema of one or more of the sinuses in the same person where there is not the slightest suggestion of heart disease present.

The liability of infection does not therefore appear to depend on the degree of involvement or the number of sinuses involved, but on the virulence of the organism causing the infection, since certain bacteria are more prone to excite disease than others.

Sinus infections although widespread among children are rarely associated with rheumatic infection and endocarditis or other forms of heart disease. The same holds true with infections of the tonsils; although universal in childhood, they are only occasionally associated with heart disease. The same holds true also with many other infections which we carry about with us, without showing any manifestations of disease.

We are therefore inclined to reason that an infected sinus is but a link in the chain; the sinus harboring germs that will directly or indirectly cause a cardiac lesion, and in only a few presenting positive manifestations.

One cannot help feeling that we are still in the dark in determining the precise circumstances and pathways through which germs will travel and terminate in an infection of the heart in a given case.

The following is a brief report of three cases of sinus disease associated with heart trouble where all evidence seems to point to the sinuses as the portal of entrance of the infection.

Case I.—A. L., male, aged twelve. Referred by Dr. M. R., January 18, 1925.

Nasal discharge since infancy. Frequent attacks of tonsillitis; measles. No other illness, no rheumatism. At age of nine had tonsils removed. Ever since the nose had been discharging more profusely than before the operation. About four years ago was told by a physician that he had heart trouble. During the past two years had been attending a cardiac clinic in a well known hospital in this city. His appetite was poor and he became cyanosed and dyspneic on the slightest exertion.

The following report came with the patient from his physician. Patient pale, anemic, underweight and undernourished, cyanosed and dyspneic. Heart was enlarged both to right and left beyond nipple line. Loud systolic murmur at apex transmitted to left along fifth interspace to axilla. Spleen and liver palpable. Lungs had scattered mucus râles at both bases posteriorly. Slight edema of both legs.

Both nares filled to capacity with thick pus, which on removal by suction showed a roomy nares with marked postnasal atrophy. Mucous membrane pale and atrophic. Throat showed scars at site of tonsils; marked postnasal drip of thick pus. A slight retraction of both drums. X ray examination of the nasal sinuses showed marked clouding of both maxillary antra, also poor illumination of the ethmoid sinus on both sides.

A diagnosis of chronic suppuration of the maxillary sinuses was made and the following course of treatment outlined.

On January 25, 1925, both maxillary antra were punctured and antroscoped. Both sinuses were found about a third filled with purulent secretion and mucosa diffusely studded with small and large polypi. Antra were then irrigated.

After three weeks of treatment the patient's general condition improved. Cyanosis and dyspnea completely disappeared as well as the edema of the legs and ankles. The nasal discharge was very scant. The patient then disappeared for eight months and returned because of a fresh cold in the nose and nasal discharge for the past two weeks, otherwise there was no other complaint. Treatments were resumed and continued for six weeks with the result that the sinuses appeared to have cleared up completely. His general condition was improved to the ex-

tent that he was able to resume school and attend it regularly as he had never done before. His heart condition was reported as markedly improved and well compensated. Liver and spleen not palpable. Edema absent, and exertion was followed by slight dyspnea not sufficient to disturb patient. At this period and against my advice the treatments were again discontinued, for the reason that the parents thought that their child was entirely well and needed no further treatment.

CASE II.—C. F., male, aged thirty-one, married, salesman. Referred by Dr. L. J. F., August 4, 1925.

Had very frequent colds in the nose. Had been confined in bed in a hospital for several weeks suffering with pains in small joints of hands and feet as well as elbows and knees. Tonsils were removed with some slight improvement. Suffered from marked shortness of breath, precordial pain and distress on slight exertion and frequent attacks of cardiac palpitation.

Physical examination reported by his physician was as follows: Patient was poorly nourished. Appeared dyspneic on slight exertion. Heart was enlarged to right, also to left going two fingers' breadth to left of nipple line. Loud systolic murmur at the apex and transmitted to the left. Second aortic accentuated. Lungs negative.

Septum deviated to the right. Roomy and atrophic left nares. Latter filled with small amount of pus. Tonsils had been removed. Ears were negative. X ray plates of sinuses taken by the physician referring this patient showed absence of illumination of the left antrum, with uniform clouding suggestive of fluid in it; also some clouding of the left ethmoids.

A diagnosis of empyema of the left antrum of Highmore was made.

On August 30th the left antrum was punctured and found to be completely filled with pus, which on being washed out revealed on antroscopic examination the mucosa studded diffusely with polypi. A large opening was then made in the nasoantral wall by enlarging the puncture made. The antrum was treated daily by irrigations and instillations of argyrol and silver nitrate solutions.

About two weeks following the operation the patient was completely free from all pains in the joints and other discomforts and complaints. He resumed his work as salesman in a haberdashery, and did his work which he had not been able to do in the past four months. His precordial pain and discomfort, palpitation with dyspnea and cyanosis on slight exertion almost disappeared. The antrum was dry and mucous lining showed marked improvement. Treatments were continued until September 30th and the patient discharged. Patient was referred back to his family physician with instructions to continue treating his cardiac condition which was reported as markedly improved. Patient was again seen November 22, 1925, was found doing well, with no recurrence of his previous complaints.

CASE III.—A. H., twenty-five years old, single, post office clerk, referred to me by Dr. H. G. K., June 14, 1923.

Patient came with the following note from his physician: "Mr. H. is suffering with a mitral regurgitation and enlargement of the heart; subject to constant colds in the nose and tonsillitis. Nasal discharge is profuse and constant and is very disturbing to the patient. Complains of pains in the chest and precordium. Gets tired and dyspneic on slight exertion."

Nose filled with thick purulent secretion. Septum S shaped deflection. Throat showed hypertrophied diseased tonsils. X ray of sinuses showed very intensely cloudy antra, with poor illumination of the ethmoids.

Chronic suppuration of antra and ethmoids with discharging empyema of the antra was the diagnosis. I advised a preliminary tonsillectomy with subsequent opening and drainage of the antra and ethmoids. The patient did not return for treatment until two years later, June 7, 1925. He gave the additional history of having since been married and had one child. His health was poor, he was having constant nasal colds and attacks of grippe, had not been able to work regularly for months. Had had no sore throat at all. His rhinoscopic picture remained the same.

Patient would not consent to a tonsillectomy, on the ground that he was both afraid to have it done and that he did not think it was at all necessary. On May 8th I punctured both antra. The left antrum was filled with pus and mucosa diffusely studded with small and large polypi. The right antrum had but little pus, with moderate polypoid changes in the mucosa.

There was a marked improvement within three weeks after the operation, both in the general condition and the suppuration of the sinuses opened. At the last examination on October 3, 1925, the patient had been working regularly during the past two months. The nose was dry and free from acute colds and profuse discharge. Chest pains and discomfort about the heart had completely disappeared. He became dyspneic only on marked exertion. Had gained in weight and strength.

CONCLUSIONS

1. From a study of the foregoing three cases the conclusion is reached that the nasal sinuses do play an important rôle in cardiac pathology, particularly when definite pathology (in the nasal sinuses) can be demonstrated.

2. The examination of a patient suffering from heart trouble should not be considered complete without an x ray examination of the nasal sinuses, and an interpretation of the latter made by a competent rhinologist.

3. An x ray plate showing a clouding of a sinus always means pathology in that sinus.

4. Every suspected sinus should be explored by puncture, antroscoped and subsequently drained and airated, if found to be pathological.

5. The operative procedure to be employed in cardiacs should be most conservative.

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Historical Medicine

Homeric Surgery and Anatomy

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In his work on *Medicine in Homer,* Daremberg has written two distinct chapters, one on anatomy and one on surgery. This plan will not be adopted here because we wish to retain the spirit of the text of the great poet. In point of fact Homer was neither an anatomist nor a surgeon; he was a poet who sang the Trojan war. We therefore believe it preferable to survey his poem with special reference to his anatomical and surgical remarks. It will be shown that in certain places he almost gives a true surgical clinic, which, if extracted from the text itself, would certainly lose its value. Naturally the *Iliad* is the richest mine from the medical point of view. In fact we must not forget that this poem in its entirety describes the war of the Trojans and Achaiens and that, consequently, an observer with Homer's wide view would be able to find much surgical and anatomical matter. Therefore we will run through the *Iliad* canto by canto and will conclude the chapter with a few remarks relating to what is found in the Odyssey.

THE ILIAD

Canto I. When Homer speaks of Juno he frequently employs this expression: "Oxeyed Hera," and it may be questioned whether or not the goddess was afflicted with exophthalmic goitre. However, there is a reason which would tend to prove that this diagnosis is somewhat exaggerated, because Juno is a goddess, the wife of Zeus, who, as we shall see later on, she can fascinate and seduce by her charms. Hence it is very probable that her esthetical makeup must have been practically without reproach. An enlarged thyroid gland would not have added to her beauty and it is probable that the poet merely wished to imply that Hera had large and very soft eyes.

Then when Homer describes Vulcan he calls him "Hephaistos limping on both feet." It is very probable that Vulcan had a bilateral congenital dislocation of the hip. The expression "limping on both feet" fairly well represents the waddling of a duck, which always provoked inextinguishable hilarity on the part of the gods when the divine smith walked among them to pour them sweet nectar. For that matter we will later on point out that Hephaistos himself recognizes his deformity, which by the way probably accounted for his conjugal misfortunes.

Canto II. Thersites harangues the Achaiens to incite them to fly from their chiefs, but the brave Ulysses quickly overcomes these warriors on account of his great military valour. This task of Ulysses was certainly easy because Thersites was the most deformed man who came before Ilios. He was crosseyed and limping, his shoulders were so rounded that they touched his thorax, while on his pointed head were only a few scattered hairs. With strabismus, rickets and baldness this unfortunate person could not make a good impression. His gross behavior drew a sharp rebuke from Ulysses, who at the same time struck him on the back and shoulders, causing a bloody tumor to develop on his back. This bloody tumor is evidently a very large ecchymosis or perhaps a serosanguinous collection produced from trauma. The description of this case is quite perfect and, although today the medicolegal aspects would be more complete, the report would nevertheless begin with a summary description as given by Homer, before entering into more detail.

Canto IV. "And the first, Antiloklos killed Ekhepolos Thalysiad, courageous Trojan, one of the bravest who fought at the front. And he struck him over the helmet covered with thick horsehair, and he pierced the forehead, and the bronze point penetrated the back." When Homer says that he struck upon the helmet, he probably implies the area of the head upon which the helmet rests, because the latter would have been sufficiently resistant to turn off the javelin. Then, too, one could not very readily understand how the weapon could have pierced the forehead and skull if the force of the weapon had already been broken by the bronze. However this may be, a better description of a fatal wound of the skull could not have been given, since the Trojan fell like a log during the severe fighting.

Next we have a wound of the thorax. Aias kills Simoeisios by striking him in the region of the right nipple and the bronze point came out through the shoulder. Here we have a perfect anatomical description and we are able to follow the weapon throughout its entire course in the body. This description might even be compared to those given us by the immortal Rabelais who, physician as he was, and unusually well versed in anatomy, relates cases with such detail that they can be considered almost as autopsy reports.

Further on in the Canto it is Ulysses who, wishing to avenge his companion Leukos, strikes the Trojan Demokoon on the temple and the point of bronze comes out through the opposite temple, and he was blinded. It is evident that a god could not recover from such a wound, the temple being one of the dangerous regions of the human body, to which Homer will refer later on.

Afterwards comes the death of Diores Anarxnkeid. The complete description of the poet will be given because it is replete with anatomical and surgical reflections. "And he was struck in the right ankle by a pointed stone and the uneven stone shattered both tendons and the bones (evidently producing a bimalleolar fracture). And Diores fell backwards in the dust, extending his arms towards his companions and hardly breathing. And Peiros ran forward and plunged his javelin near the umbilicus and the intestines became spread upon the earth. And darkness fell upon his eyes. And as Peiros rushed forward the Aitolian Thoas struck him in the thorax with his lance just above the nipple and the bronze passed

through the lung. Then Thoas rushed forward and tore out the fearful javelin and, drawing his sword, he ripped up Diores's belly and killed him." The man had certainly great vital resistance because after a small abdominal wound through which the intestines could escape, it was hardly necessary to give him a *coup de grace* by ripping up the abdomen.

Canto V. The goddess Pallas Athene gave strength and audacity to the Tydeid Diomedes; she even caused inextinguishable fire to issue from his helmet and shield, similar to the autumn star which glitters out of the Okeanos. Thus, when Phygeus threw his long spear at him its point merely grazed the left shoulder of the Tydeid and did not wound him. On the other hand, the weapon of the Tydeid was not useless, for he plunged it into the chest of the warrior between the breasts and threw his adversary down.

Agamemnon also threw the great Odios, the chief of the Alizones, from his chariot, and as he fled Agamemnon plunged his lance into his back between the shoulders and the weapon pierced the thorax.

Moreover the Evaimonid Eurypylos rushed upon the divine Hypsenor, and as he fled he struck his shoulder with his sword and cut off the arm, which fell to the ground heavily and dripping with blood.

It is evident that Homer had no difficulty in describing various types of wounds occurring in all parts of the body. "And Meriones chasing Phereklos struck him in the right buttock and the point of the spear went through the bone and reached the bladder."

Now this wound could not have been the invention of the poet, because the description is anatomically correct, and the same applies to the following case: "And the illustrious Phyleid approaching him, struck the back of his head with his lance and the point came out through the teeth, severing the tongue and the warrior fell to the ground clenching the cold bronze in his teeth." For any writer a blow struck on the back of the head is quite sufficient to stun the man, yet Homer is still more precise and he describes the course taken by the lance coming out through the dental arches.

Homer also knew that when a weapon remained in a wound it would act as a hemostatic and that the blood would not flow until the weapon was withdrawn. This is what happened to Diomedes, wounded by Lykaon. A rapid arrow struck him in the shoulder and when it was withdrawn by Sthmelos the blood spurted forth covering his tunic. This occurrence, however, did not prevent him from getting into his chariot under the protection of Pallas Athene and continuing a single combat with Lykaon. "Then he threw his lance and Athene directed it to the nose, near the eye, and the undaunted bronze passed through the white teeth, severing the end of the tongue, and came out through the chin." In one of the cases already mentioned, the weapon inflicted a wound from behind forwards, but in this case the result is the same because the life of the warrior was involved.

The Tydeid Diomedes continues his exploits and, seeing Aineias running forward to remove Lykaon's corpse, he seized hold of a heavy rock and struck Aineias on the thigh at a point where the femur turns in the cotyloid cavity, and the rough stone, hitting the hip joint, ruptured the two upper muscles and tore the skin. The hero then fell on his knees, because he certainly had a fracture of the upper end of the femur, very probably complicated with a fracture of the pelvis.

What seems to be a less likely thing is that in such a condition Aineias was able to return to the battlefield in a few days in possession of all his strength. It is true, however, that in order to explain this Homer invokes the intervention of the goddess Aphrodite and the god Apollo.

In a single combat between Sarpedon and Tlepolemos, both warriors threw their long lances at the same time; "and Sarpedon struck Tlepolemos in the middle of the neck and the sharp point of the weapon went completely through, and darkness fell upon the eyes of Tlepolemos. But he had pierced Sarpedon's left thigh with his long lance, and its point remained wedged in the bone, and his father the Kronide turned death away from him. And the brave companions of Sarpedon carried him away from the fray. And he groaned, dragging the long oaken lance in his wound, because none of them had dreamt of tearing it from the thigh of the warrior, so that he could get into his chariot, in such haste were they."

Canto VIII. The reader is undoubtedly familiar with the famous wound of the cerebellum which Paris inflicted upon Nestor's horse. He pierced the top of the animal's head with an arrow, a vital spot, there where the upper part of the mane turns over. The weapon, having penetrated the brain, the animal was seized with pain and rolling on the ground, terrified the other horses.

Another vital spot is the region where the clavicle divides the neck from the chest, on account of the presence of large bloodvessels and nerves. It was thus that Hector struck Teukros on the shoulder with a hard stone and he fell to his knees, letting his bow fall from his hand because his wrist was also crushed.

Canto X. Homer describes an instance of decapitation. The traitor, Delon, offers his services to Ulysses and as a reply the latter suddenly struck him with his sword in the middle of the throat, severing both muscles (the sternocleidomastoid muscles). The Trojan spoke when his head fell into the dust, which unquestionably is a peculiar phenomenon.

Canto XI. "In Hector's presence, Diomedes threw his long lance which turned not away from its target, for the blow fell upon the top of the Priamid's helmet. The bronze point could not penetrate and rebounded; thus the helmet of triple bronze, given to the Priamid by Phoebus Apollo, saved him. But the warrior at once recoiled and then, entering into the crowd, he fell upon his knees, supporting himself with his strong hand, and darkness fell upon his eyes." This is undoubtedly a case of cerebral concussion. Hector's helmet protected him from the weapon, but the impact was so strong that it caused concussion of the brain and he lost consciousness.

Agamemnon was more seriously wounded by the warrior Koon, who struck him with a lance in the middle of the arm below the elbow, and the point of the brilliant weapon went through the arm. Agamemnon did not at first feel his wound, a common occurrence on the battle field, and continued to fight as long as the blood flowed from the wound, but as

soon as it became dry, the blood having been staunched, acute pain developed, and conquered his strength so that he was obliged to return to his ship. The same phenomenon is observed in Diomedes, wounded by Paris, who sent an arrow into the right foot of his adversary. The arrow went through the foot into the ground and it was only when Ulysses drew out the weapon that Diomedes experienced such sharp pain that he also was obliged to return to his ship.

Homer also describes a wound of the liver and shows very clearly that he knew that this gland is situated under the diaphragm. Eurypylos pierced the Phausiad Apisaon, the prince of people, in the liver, under the diaphragm, and killed him.

Canto XIII. In this canto Homer gives an excellent description of the twitchings occurring when a mortal wound has been inflicted. Idomeneus struck Asios in the throat, under the chin, and the weapon pierced the neck. The warrior fell to the ground and remained extended in front of his horses and chariot, grinding his teeth and plucking at the blood-stained dust. He also was the recipient of a famous *coup de grace* in the middle of his belly, given him by Antilokhos.

The liver of the Hippasid Hypsenor was also considerably damaged by Idomeneus. The blow was so violent that his knees gave way. A little further on Homer shows that the point of a lance lodged in the heart does not cause the organ immediately to stop beating, because the weapon oscillated with the cardiac contractions.

Idomeneus continues his exploits by perforating the intestines of Oinomaos, who fell "clutching the earth with his hands." The latter expression is very probably used in order to show that the body of the warrior fell forward; the truth of this is still further demonstrated by another Trojan who fell backward on the dust after having received a wound which severed the vein which "running along the back reaches the neck." The question now arises what vein Homer refers to. It is not likely that it is the azygos which naturally was unknown to him, no matter how great his great anatomical knowledge may have been. Then, too, severing this vein would not result in such sudden death as that described by the poet. Hence one may conclude that it was the inferior vena cava which was involved.

Meriones, pursuing Adamas who was fleeing, pierced his body between the umbilicus and the genital organs, a region where a wound is fatal for men, so Homer informs us. There is here evidently a mistake in the poet's topographical anatomy. It is probable that the very dangerous region referred to must be that of the celiac plexus and this is situated quite a little above the umbilicus. This is not a sufficient reason, however, to doubt the real anatomical knowledge of the poet; it should not be forgotten that he merely observed and that certainly he had never dissected.

Next it is Helenos who was struck by an arrow from the bow Menelas. The wounded warrior did not waste time in withdrawing the weapon and entered the fray with the arrow hanging from the hand. In this case a woollen sling was used as a dressing. Menelas did not remain idle for meeting Peisandros, he struck him over the forehead above the nose and the bones creaked and his bloodstained eyes burst out and fell to his feet in the dust. Such an injury could not be produced by a spear, therefore a little further on Homer states that Menelas had drawn his double bladed sworn, consequently one can readily understand that by a sharp blow he could shatter the frontal bone and that the weapon could penetrate sufficiently deeply to sever the extrinsic muscles of the eyes, the optic nerve, and all other means of contention, hence the eyes could fall from their sockets. In this canto there is also mentioned another instance of perforation of the bladder by a weapon passing through the right coxofemoral joint.

Canto XIV. Homer has noted that one of the frequent complications of blows on the chest is hematemeses and hemoptysis. With a rock Aias struck Hector on the chest above his shield, in the region of the neck. The warrior fell from the blow and when consciousness returned he opened his eyes and vomited black blood, after which he fell back on the ground. This is a case of traumatic hematemesis.

Then comes another instance of decapitation, but this time it is accomplished from behind forwards; Homer knew the sternomastoid muscles as has been shown, and in the present instance he shows his knowledge of the muscles of the neck. It is evident that he also knew that the cervical and dorsal vertebræ were not alike, at least this may be supposed from the following remark: "he was struck over the last vertebra of the neck and both muscles were severed, and his head, his mouth and his nostrils touched the ground before the knees." Here again we find that precision of detail which shows the considerable anatomical knowledge of the poet.

Canto XV. Here we see Hector facing Lykophon and striking him with his sharp spear just above the ear, thus causing the warrior to sink down. In this instance Homer wished to describe shock resulting from a blow over the temporal region, just as a little further on, when he depicts Kleitos stunned by an arrow entering the back of the neck, he shows that he knew that the bulb of the brain was to be found in this region and that as soon as it was injured death was instantaneous.

Homer frequently speaks of javelins piercing the chest near the breast, as happened to the proud Menalippos. It is probable, since he takes the trouble exactly to describe the point of entrance as being near the breast, he wishes to imply a wound of the precardiac region.

Canto XVI. The Phyleid struck Amphiklos low down on the thigh at the point where the muscles are very thick, and the head of the spear tore the nerves. This may be interpreted as a wound of the upper part of the poplital space, but the nerves referred to are the tendons.

Maris, attempting to avenge his brother, Amphiklos, was struck by Thrasymedes who pierced his right shoulder and the point of the weapon by severing all the muscles stripped the bone of all the flesh attached to it.

Aias Oiliad struck Kleoboulos in the neck, but before the weapon penetrated into the throat it cut both carotid arteries, thus giving rise to fatal hemorrhage.

Next Homer gives us a faithful description of fracture of the skull in the following pasage: "Ido-

meneus struck Erymas in the mouth with his spear and the bronze point went into the brain breaking the white bones (the small bones of the base of the skull); all the teeth were loosened and both eyes filled with blood, while blood gushed forth from the mouth and nostrils. And darkness fell upon his eyes." The symptomatology of fracture of the skull is here quite complete.

Canto XX. Achilles split open the head of the Trojan Otrynteid with a stone. He also burst Demoleon's temple, although it was covered by his helmet, but as this is a weak point of the skull the bone was broken and crushed the entire brain. Here is the description having a really striking reality. Achilles pursued Polydores Priamid and struck him in the back at the point where the clasps of gold attached the shoulder belt to the double breast plate. The point of the weapon pierced the body to the umbilicus and the warrior fell to his knees.

What is less true is the tearing out of the liver by a blow of a sword which Homer attributes to Achilles in the person of the Trojan Alastorid.

Other wounds of battle are described in cantos XXII and XXIII but enough has been said to show the great anatomical and surgical knowledge of Homer.

THE ODYSSEY

Anatomy and surgery are practically missing in the *Odyssey* and what little is said of them is merely a repetition of what is found in the *Iliad.* It is certain that Homer considers the hepatic region as very dangerous because the intestine surrounds the liver, and it is for this reason that Ulysses wished to strike the Cyclops with his sword in this region. This adventure gives the poet an opportunity to describe with pathological exactitude the wounds received by the Cyclops. Ulysses, after having heated his olivewood javelin in the glowing ashes, pushed it into the eye of the Cyclops and then turned it round as a shipwright bores holes in the wood with his augur. . . . And the blood gushed out from the eye and the vapor of the firey pupil burnt his eyelids and eyebrows."

There is another instance of wound of the liver occurring to Eurymakhos from a javelin thrown by Ulysses but in such a direction that the weapon pierced the warrior's chest near the breast and continuing onwards became wedged in the liver.

As a conclusion it may be said that the descriptions of wounds given by Homer prove that the topographical anatomy of the human body was no secret to the ancient Greeks.

Contributors to the Science of Medicine

John Locke

John Locke is put down in a medical biography published in 1799 as a very celebrated philosopher and one of the greatest men England ever produced. He was these and an authority on certain branches of medicine as well. He wrote a work on the rearing of children which may be read with advantage in these days.

John Locke was descended from what was termed then a "genteel family" in Somersetshire, once possessed of a handsome estate, but much impaired when it came into his hands from his father who was bred to the law, and who followed it, till the breaking out of the civil war under Charles I, when he entered into the service of the parliamentary party. William Harvey was a staunch royalist and Thomas Sydenham a follower of Cromwell.

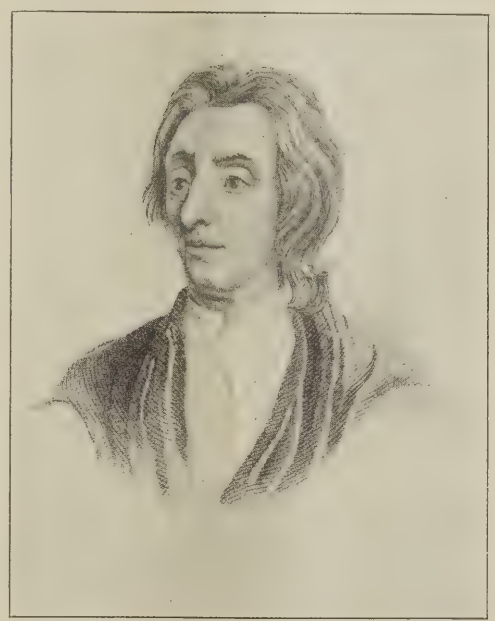
John Locke was born near Bristol in 1632 and educated at Westminster School whence he went to Christ Church College, Oxford, in 1651, where he excelled in polite literature. He took his degrees in arts in 1655 and 1658 and then took up medicine, went through the usual courses preparatory to practice, and commenced practice in Oxford. But being of delicate constitution, the work proved too hard and he accepted the offer made to him of secretary to Sir William Swann, envoy to the elector of Brandenburg, the Hohenzollern ancestor of the ex-Kaiser.

After a stay of a year in Germany he returned to Oxford and was continuing his medical studies when he became acquainted with Lord Ashley whom he treated successfully and who made him his house physician. However, he did not confine himself to medicine but applied himself to the study of politics, ecclesiastical and civil. About the year 1669 he attended the Countess of Northumberland into France but returned to England in 1670. On his return he lived as before with Lord Ashley, then Chancellor of the Exchequer, who, jointly with some other lords, having obtained a grant of the State of Carolina, employed Locke to draw up the fundamental constitutions of that state. Locke still retained his student's place at Christ Church College and went to reside occasionally at Oxford for the sake of study as well as for change of air. He had conceived an early aversion to the teaching and the methods of Aristotle and began to collect material for his own great work, *Essay on Human Understanding.* In the meantime his patron, Lord Ashley, who had been created Earl of Shaftesbury and made Lord Chancellor in the following year, appointed him to a lucrative post. He held this place until 1673 when his master being deprived of the Lord Chancellorship, Locke fell into disgrace also.

In the beginning of 1674 he took his bachelor's degree in physic at Oxford, and in the following summer went to Montpellier, being in the quaint phraseology in vogue then "inclinable to a consumption." He continued abroad until 1679 and occupied himself partly in the preparation of his essay and partly with his profession.

Locke seems to have combined philosophy with

medicine to his own satisfaction and to the benefit of humanity. He is said to have been esteemed greatly by the faculty of medicine and especially by his friend, Sydenham, the most celebrated practitioner of the day and whose method of practice he approved and followed. He wrote a Latin copy of verses, which were prefixed to the *Observationes Medicæ,* which Sydenham published in 1676 and in 1677 having left Montpellier, he wrote from Paris to Dr. Mapletoft, another renowned English physician, professor at Gresham College, intimating, that in case of a vacancy by that friend's marriage, he should be glad to succeed him. He remained in France until he was sent for by the Earl of Shaftesbury, but who again being disgraced and impeached shortly afterwards succeeded in escaping to Holland to avoid a prosecution for high treason and was followed by Locke. After the death of the Earl he found it necessary for his own safety to remain abroad, as he was suspected of being a confederate. So strong was this suspicion that he was removed from his student's place at Christ Church, Oxford, in 1684, by a special order of King Charles II. Locke thought this action so malicious that when he returned to England, after the revolution by which James II was deprived of the throne, he put in his claim to the studentship, but the claim being rejected, he declined the offer of being admitted as a supernumerary student. It was in the same spirit, when he was offered a pardon from Charles II, by William Penn, the famous Quaker, who had known him at college, he refused it alleging that being guilty of no crime he had no occasion for a pardon. In May of 1685 the English envoy at the Hague demanded that he be delivered up by the States General on suspicion of being concerned in the Duke of Monmouth's invasion. Because of this he lay concealed for nearly twelve months, during which period he spent his time in writing books and chiefly his *Essay on Human Understanding.*



JOHN LOCKE

In 1687 he formed a weekly assembly at Amsterdam with Limborch, Leclerc and others, for holding conferences on subjects of learning, and at about the end of the year finished his great work the "Essay" on which he had spent more than nine years. At the same time he made an abridgement of it which was translated into French by Leclerc, and published in his *Bibliotheque Universelle* in 1688. This abridgement was apparently sent out for the purpose of feeling the pulse of the public and it being found to be appreciated by a large number of persons, Locke published the complete work soon after his arrival in England in the fleet that convoyed the Princess of Orange to her husband in February, 1689.

As he was regarded as a sufferer for revolutionary principles, he might have easily have obtained a lucrative post, but contented himself with that of Commissioner of Appeals, worth £200 a year. About the same time he was offered posts in the public, now termed diplomatic service, and he was given the choice of being envoy at the court of the Emperor of Austria, of the Elector of Brandenburg, or at any other which he thought was best suited to his health. However, he declined all these offers on account of the precarious state of his health and went to live in the house of some friends in Essex not far from London. Here his health improved considerably and his time was taken up chiefly in writing on various subjects. He was made a commissioner of trade and plantations in 1695. In 1700 he resigned his seat at the board of trade and lived in the country for the remainder of his life. He died on October 28, 1704, in the seventy-third year of his age.

The writings of Locke cover a wide range of topics and have been published many times, the most complete edition appearing in 1823. His celebrity as a philosopher, however, rests mainly upon his two treatises, *Essay on Human Understanding* and the shorter work entitled *Conduct of the Understanding.* The former of these works was commenced as early as 1670, and was finished in 1687. It was followed in the next few years by the *Letters on Toleration,* the *Treatises on Government, Thoughts on Education,* and several minor essays in vindication of opinions advanced in his larger works.

While Locke was greater as a philosopher than a physician, he was accounted one of the first physicians of his day. As a philosopher he is placed on a plane with Bacon and Newton, and it is on his works in philosophy that his fame rests. There is probably no writer on philosophy who has produced such a broad and solid effect on the mind of the English people. Few have turned their attention to metaphysical inquiries without reading his *Essay on Human Understanding.* D'Alembert says that Locke created the science of metaphysics in somewhat the same way as Newton created that of physics; and his inquiries into the origin, development, and combination of our thoughts justly entitle him to be called the founder of psychology in England.

History of Diabetes.—In a book entitled *Facts and Opinions Concerning Diabetes* John Latham published in 1808 his experiences with diabetes. He distinguished two forms of diabetes, saccharine and serous, and recognized the difference between diabetes mellitus and diabetes insipidus. He may thus be considered as one of the founders of our knowledge of diabetes. In his book he gives an excellent history of diabetes. (*English Physicians of the Past.*)

Editorial Articles

ORAL SEPSIS AND HEART DISEASE

What is the main cause of heart disease, now the most deadly and invaliding disease of civilization? The answer of the majority of medical men to this question will be probably rheumatism in all its forms and acute rheumatism in particular. In childhood acute rheumatism and scarlet fever play prominent rôles, and in all cases of what is known as toxic heart the condition of the mouth is a factor which must be always considered.

In a second edition of Sir Kenneth Goadby's book, *Diseases of the Gums and Oral Mucous Membrane,* published by Oxford University Press, the question of poisoned heart is dealt with at some length by the author in collaboration with Dr. Strickland Goodall, of London, the well known heart specialist.

In reference to poisoned heart, Sir James Mackenzie in his *Diseases of the Heart* has this to say: "The muscle of the heart may be impaired by agents which infect it in the manner of a poison without producing structural changes, unless the poison is long continued, when by its persistent action it may lead to structural changes." As for treatment, Sir James says, "The appropriate treatment is to get rid of the poison. Simple as this proposition seems, yet it is wonderful to find how often it is neglected, or, if not neglected, how attempts are made to cure the heart as if it were something apart from the intoxication."

Goadby and Goodall have investigated numerous cases of socalled poisoned heart in which the origin of the poison was traced to diseases of the gums and jaws. Goodall points out that the term poisoned heart or toxic heart indicates neuromuscular impairment as distinguished from primary defects of the heart mechanism, although, of course, this latter condition may arise as a complication or a sequela. The actual poison affecting the heart may be one of the definite alkaloids such as nicotine, or a combination of poisons such as digitalis, this drug producing poisoning without gross structural alteration. Diphtheria toxin is another well defined poison whose action upon the heart muscle is acknowledged. The poisons of bacillary dysentery and again of malaria are of a fairly well defined nature, and are known to produce toxic effects upon the heart muscle. Among the more indefinite poisons are those arising from certain diseases, as, for instance, influenza, acute and chronic rheumatism. Such a list does not exhaust the poisons which may affect the heart muscle, and electrocardiographic investigation has shown that the action of poisons upon the heart appears to be of a twofold nature; just as there are group agglutinins and specific agglutinins for bacteria, there is what may be called a group action and a specific action leading to progressive alteration in the irritability, contractility, conductivity, or tonicity of the myocardium.

Goodall shows a series of electrocardiograms illustrative of the profound action of various poisons upon the heart muscle. For example, the effect of large doses of digitalis producing coupled beats. Impaired conduction and increased irritability following diphtheria. Increased irritability of a heart subject to the attacks of paroxysmal tachycardia following influenza. Again influenza may produce a totally different effect, as seriously impaired conduction producing heart block. Poisoned hearts are common after influenza. Attention is drawn to the fact that in acute rheumatism evidence for the streptococcal origin of the poison is great. Moreover, in addition to the general poison effect there is some evidence of specific action. Thus in streptococcal infections, pericarditis may be a complication and may also supervene in certain other infections by the pyogenic cocci; whereas in diphtheria with its microbic cause strictly localized pericarditis is as yet undescribed. A poisoned heart may be a complication of chronic rheumatoid arthritis, admittedly associated with mouth infections. Goodall's series of electrocardiograms of persons suffering from oral sepsis demonstrate in a most illuminating manner that the effect of poisons of various grades is to induce changes of a profound nature in the functions of the cardiac muscle.

In addition, in their early stages the alterations in conductivity, irritability, contractility or tonicity may exist without obvious clinical or objective symptoms, but may be detected by appropriate methods.

There is, of course, no doubt that oral sepsis is often intimately associated with that condition known as "poisoned heart" and is a factor in its causation of the first importance. As to whether septic conditions of the mouth are secondary to those of the gastrointestinal tract is still a moot point. Many believe that the origin of a great deal of oral sepsis is gastrointestinal disorders and intestinal stasis in particular. However, it is certain that oral sepsis aggravates bad gastrointestinal conditions and vice versa. A vicious circle is formed which can be broken only by rational means. Sir James Mackenzie's advice to get rid of the poison and not to treat the heart only is manifestly sound. Oral sepsis should be remedied as far as possible and the gastro-

intestinal and urinary tracts should be cleansed to the utmost. Elimination and excretion should be rendered free. It is likely that poisoned heart is more common than is generally believed, although the part that rheumatism is playing in producing heart disease is beginning to be recognized as one of the greatest menaces of modern life. By preventing poisoned heart from developing, much mortality, sickness and trouble of many varieties will be also prevented.

THE TREATMENT OF CHRONIC HEART FAILURE

The great man who died a short time ago, Sir James Mackenzie, greatly improved if he did not revolutionize diagnosis of heart disease and abnormal conditions, and in recent years this improved knowledge has aided immensely in bettering treatment. It is obvious that if views as to the causation of heart disease are lacking in intelligent comprehension, treatment fails frequently. But knowledge of the heart has so increased that its treatment is now based largely on scientific principles. In the *Canadian Medical Association Journal* there was published recently an address delivered before the postgraduate class at Dalhousie University, by Dr. Robert Dawson Rudolf, of Toronto, on September 8, 1924.

Dr. Rudolf begins by pointing out that it is scarcely necessary nowadays to say that heart failure means failure of the myocardium and people do not die of mitral disease or of aortic regurgitation as was believed up to a comparatively recent date. It is only in so far as lesions of these parts hamper the action of the muscle that they have any significance. Moreover, heart failure signifies failure of the ventricles, for as long as these are working sufficiently there is no failure, even although the auricles may have struck work completely and are in a state of fibrillation.

Heart failure is by no means synonymous with auricular fibrillation, although the two are associated quite frequently. Failure may occur in a regular heart and may be absent in an irregular one. As a rule, a failing heart is a fast one, but this is not the case always.

It is extremely difficult to differentiate between true and false cardiorenal disease, but either condition can be judged often with a fair degree of accuracy by clinical observation and by observing and testing the urine. In cases of cardiac failure rest is indicated, but rest in proportion to the degree of failure. In very slight cases of cardiac insufficiency carefully regulated gentle exercise is often of value in improving the tone of the myocardium. Rudolf insists that in all cases of heart failure the bowels should be kept opened freely; in his opinion this object is gained best by the daily use of sufficient amounts of concentrated magnesium sulphate solution. In severe cases little food should be given and in patients who exhibit much toxemia the Karrell diet is recommended.

When the digestion is extremely poor, Rudolf advocates the employment of glucose and alcohol. Neither requires any digestion and when absorbed the caloric needs of the sufferer are supplied to a large extent. When alcohol is used thus as a food it should be given in small amounts frequently. It is stated that often rest and perfect dieting are sufficient to restore some of the reserve power of the heart, but usually digitalis is indicated and stress is laid upon the point that it gives marvellous results when properly administered in suitable cases.

Rudolf does not wholly agree with Dr. G. A. Sutherland, *Lancet,* December 8, 1923, that all the good effects of digitalis are due to the slowing of the ventricular rate. There are many with whom Rudolf agrees, who believe that although the slowing from the heart block is of very great importance, and probably is the chief cause of the good effects in these cases of auricular fibrillation, there is much evidence of a direct stimulating action on the heart muscle. According to Rudolf, always use digitalis when drug therapy is indicated in cases of heart failure, except when it upsets the stomach and when coupled beats, cerebral disturbance, and more or less stoppage of the urinary secretion are present.

Sometimes a diuretic is necessary, and Rudolf recommends what in his opinion is the most effective. He, however, places his faith in digitalis and holds that although quinidin may be of value in cases of auricular fibrillation, when the case is complicated with heart failure, digitalis still maintains its position as the remedy par excellence for such failure.

These views are most instructive and very valuable in spite of the fact that several authorities contend that in the vast majority of cases auricular fibrillation is indicative of some myocardial change. Nowadays, medical views on the causation of heart disease are that it is largely brought about by acute rheumatism, especially in childhood, and that if acute rheumatism in childhood could be prevented that heart disease would be much less frequent. Careful diet and living generally, paying particular attention to the excretion and elimination of toxic material by the gastrointestinal and urinary tracts, will no doubt prevent the occurrence of much rheumatism, but in the meantime we have to consider the treatment of organic heart disease, which in all civilized countries is almost the most frequent cause of death and invalidism.

THE HISTORY OF MEDICINE AND NURSING

The history of medicine, in which nursing may be included, is fascinating and at the same time instructive and in a sense not conducive to a too great conceit in present day knowledge. Of course, medicine has had its rises and falls. A high state of culture, written records show, existed in Egypt 9000 B.C., which seems to have reached its apex between 5000 and 2000 B.C. In this and in Babylonia and Assyria, Armenia, Palestine, Persia, India, Ceylon, China, Mexico, Peru and somewhat later Japan, Crete, Greece and Etruria, the view held by primitive man, as the North American Indian and African, that disease was a form of demoniacal possession which must be expelled by blows, had given way to the conception of the priest physician who ministered to both physical and mental needs of patients.

Later these offices were separated and discharged by the priest who performed the religious offices, while the actual treatment of disease was carried out by men who corresponded closely with present day physicians. In Egypt, indeed, were the learned and cultured men of old times and it was from the land of the Nile that Greece procured her medical knowledge which in turn she handed on to Rome. Egypt had great medical libraries and the oldest medical book known is the Egyptian *Ebers Papyrus*. It contains Egyptian medical records written between 4688 B.C. and 1560 B.C., which form an encyclopedia of disease. Little is said of nursing and hospitals in the history of Egypt.

It may be noted that in ancient India nursing was developed to a high degree and the old Indian practitioners studied and practised the prevention of disease more than its treatment. In both India and Ceylon there were hospitals for the sick poor in very early times. Civilization is supposed to have spread from Asia to Greece in or about 3500 B.C. The early Greeks were a hardy, seafaring, clever race of great individuality and originality, which made them later the leaders of the world in art and literature and to some extent in medicine. The Greeks, however, were largely indebted to the Egyptians for their medical knowledge, as well as for other knowledge, and it is from the Egyptians that medical knowledge had its origin. In the times of Homer Greek surgery was more highly developed than medicine, probably on account of the wars which were being waged continually. It must be borne in mind that the Egyptian surgeons were skilful, as has been proved by the examination of mummies on whom many of the difficult operations of modern surgery were found to have been performed. Hippocrates lived in the marvelous fifth century before Christ, the Golden Age of Greece, in which there lived in one country at one time perhaps the greatest philosophers, dramatists, sculptors, poets, writers and statesmen the world has ever known. Hippocrates was the greatest physician and he laid the foundations of modern medicine. After the fall of Corinth Greek medicine migrated to Rome, as it must be remembered that medicine in Rome was almost entirely carried on by Greeks. The last great Greek physician in Rome was Galen, the father of experimental medicine.

In the early Christian times nursing rose to a fairly high standard. It was carried on chiefly by the Deaconess order. The first deaconess was Phebe of Cenchrea A.D. 60, who was sent to Rome by St. Paul to care for the sick there. This order spread rapidly, especially in the Eastern Church, and a form of district nursing was established, which of course is still being carried on. Also Diakonia sprang up everywhere for the care of the sick managed by the order and were the historical forerunners of the modern hospital. In the early church there were many other women workers among the sick outside the Deaconess Order. At this time monasteries and nunneries were founded in which men and women withdrew from the world under vows of chastity and gave up their lives to service and kept the lamp of literature, art and medicine burning. Rich and poor united in organizing hospitals and other charitable institutions dedicating themselves to the service of religion and the sick poor. These beautiful monastic hospitals of the early Middle Ages did splendid work. Up to the eighteenth and early part of the nineteenth century these monastic institutions held sway, when new conditions demanded new forms of social adjustment and the modern hospital system arose to displace them.

Among the celebrated nurses of history the name of Jeanne Mance comes readily to the mind of Americans because she established the second hospital on this continent under most romantic circumstances. Jeanne Mance came from France with Maisonneuve's expedition to found Montreal. The members of the expedition were impelled by religious fervor and inspired by a vision to found a colony on the island now known as Montreal in order to evangelize the Indians. Jeanne Mance joined the expedition with the purpose of founding a hospital. This purpose was fulfilled shortly after the landing of Maisonneuve and the first Hôtel Dieu was built in Montreal in 1642. Jeanne Mance had never taken vows except those of perpetual chastity and after managing the hospital for eleven years returned to France and obtained the services of the hospital nuns of St. Joseph de la Fèche whom she brought back with her to Montreal and placed the control of the Hôtel Dieu in their hands. To Florence Nightingale was mainly due the foundation of the modern nursing system.

Bulfinch Building

The Massachusetts General Hospital

An Historical Sketch

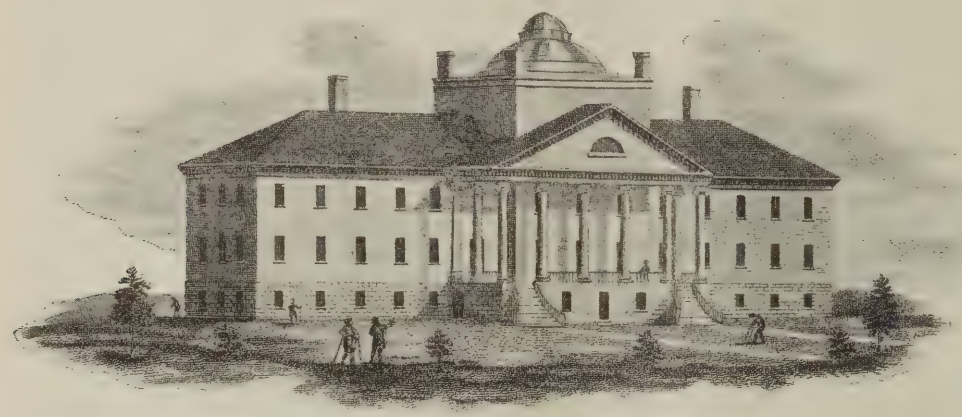
GRACE WHITING MYERS, Librarian Emeritus, Treadwell Library

Boston, Mass.

Under date of May, 1810, a letter was written by the professors of Harvard University to the Overseers of the Town of Boston, requesting their consideration of the question of allowing professors or lecturers to "attend their pupils to the patients in the Almshouse of Boston, for the purpose of remarking on the nature of the cases, and pointing out to them the best methods of treatment and mode of care which their own observations and experience might enable them to suggest. The subscribers have no regard to any form of compensation for any service they might afford, but would be willing that the physicians of the house should receive the usual emolument of the appointment, and would afford him every aid and advantage which it is in their power to bestow as consulting physicians, without fee or reward. . . . If the Overseers think proper to adopt the measure suggested, it would be a means of removing the necessity which students are now under of remaining ignorant of the most important part of their profession, or going to Philadelphia or New York for the sake of attending to the practical part—to attend the hospitals and infirmaries—and thus have the satisfaction of saving a multitude of lives to the Commonwealth by (providing) better measures for qualifying the existing generation of physicians to cure disease than what are, or can be, at present enjoyed. And all without the least disadvantage to the poor who would be treated with more care and attention than can happen in the ordinary routine of medical attendance." In July, 1810, a reply was received acceding to the request for the remainder of the current year. At that time the Pennsylvania Hospital in Philadelphia and the New York Hospital in New York City were the only general hospitals in the country. At a meeting of the above mentioned professors of Harvard University, held on October 20, 1810, it was voted: "That the patients in the Almshouse be divided into two classes, medical and surgical. That Dr. J. C. Warren take charge of the surgical patients. That Dr. (James) Jackson take charge of the medical patients for three months from November 1, 1810, and for one month longer if circumstances required. That House Pupils shall be admitted to attend the Almshouse for the sum of $50 for the year."

Nowhere in New England was there a hospital. The Boston Almshouse was the only refuge in that city for the sick poor and for the insane. The conditions surrounding the latter were deplorable, for

they were literally treated as if "possessed of devils," and not to be approached without some means of self-defense. The Pennsylvania Hospital maintained a department for the care of the insane, and the Bloomingdale Hospital connected with the New York Hospital had been opened the previous year. One other, the State Hospital at Williamsburg, Virginia, completed the list of institutions of this nature.



Original Building

It happened that in November, 1807, a certain Reverend John Bartlett became chaplain of the Boston Almshouse, and he was much distressed by these conditions surrounding the mentally ill. In the early spring of 1810, a particularly grievous case of insanity was brought in, and the chaplain determined to seek some means for more humane care. So he called together a group of representative citizens, including Dr. Warren and Dr. Jackson, already mentioned, and[1] Mr. McLean for whom the McLean Asylum at Somerville, Massachusetts, was later named. Other meetings followed this one, and it was decided to start a subscription list for the establishment of a hospital for the care of the insane, and first subscriptions were for this object; but shortly afterwards it was deemed expedient to unite with it the establishment of a hospital for the sick.

A circular letter was accordingly issued by Dr. James Jackson and Dr. John C. Warren in August, 1810, inviting subscriptions "for a hospital for the reception of lunatics and other sick persons." The letter closed with the following words: "Hospitals and infirmaries are found in all the Christian cities of the Old World; and our large cities in the Middle States have institutions of this sort, which do great honor to the liberality and benevolence of their founders. We flatter ourselves that in this respect, as in all others, Boston may ere long assert her claim to equal praise."

On February 25, 1811, the charter was obtained from the Legislature, incorporating fifty-six of the "most distinguished inhabitants of the various towns of the Commonwealth, by the name of the Massachusetts General Hospital." The first meeting of the Corporation was held April 23rd of the same year. Trustees were first chosen February 2, 1813. "A common seal was ordered to be prepared; and on November 30, 1817, Colonel Joseph May, one of the trustees, laid it before the Board—the device being an Indian with a bow in one hand, and an arrow in the other; and on his right, a star, being encircled with the inscription 'Massachusetts General Hospital'; and it was accepted accordingly."

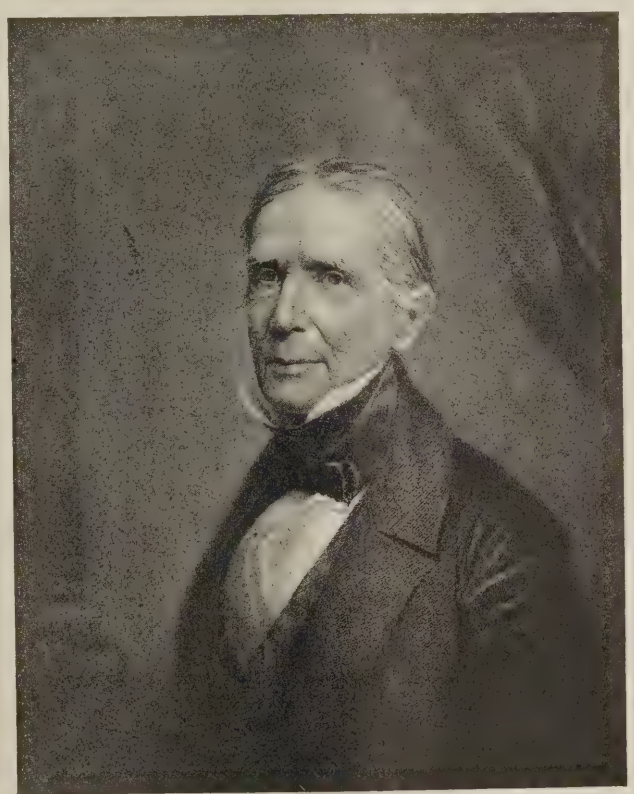
At the time of the granting of the charter the Governor, Lieutenant-Governor, President of the Senate, Speaker of the House, and the Chaplains of both Houses, were constituted a board of visitors. A grant was made of the Province House estate, socalled, with authority to sell the same and use the proceeds at pleasure, provided that within five years an additional sum of $100,000 should be obtained. A further term of five years was later allowed. Province House had an interesting history. It was built in 1679 on the main business street of the town, and in 1716 was purchased from its owner by the Provincial Legislature for the residence of the Royal Governors, and was used as such until the Revolution. After the separation of the colonies from England it became "Government House," and was held by the State until its presentation to the Massachusetts General Hospital. It constituted the first gift to the hospital. Plans were made to remodel the house for a hospital and asylum, but this was found to be impracticable. In 1817 the property was leased for a term of ninety-nine years, the lease expiring ten years ago. The house has now been torn down to make way for city improvements, and during its demolishing some interesting secret passages were disclosed, doubtless used during the days of the Revolution.

Phillips House

[1] In 1832, Mr. McLean left the sum of $25,000 to the Corporation, and named it as his residuary legatee. Eventually the Corporation received nearly $120,000 from the McLean estate.

In 1816 land was purchased in Somerville for the erection of a hospital for the insane. This was built first, and was opened for the reception of patients in 1818. In 1817 land was bought on Allen Street, Boston, as a site of the Massachusetts General Hospital. By a resolution passed by the Legislature, it was provided that stone for the erection of the building should be hammered and fitted for use by the convicts in the State Prison. Several plans for the hospital were received, and referred to a committee. A prize of $100 had been offered for the best one submitted, and this was won by Charles Bulfinch. This first of the many buildings now occupied by the hospital has always been called the Bulfinch Building (Fig. 2). Its distinguished architect had already planned and built the Massachusetts State House, and had been called to Washington to rebuild the Capitol. The cornerstone of the hospital was laid on July 4, 1818, by the Grand Lodge of Masons, with full masonic ceremony. The building was completed in 1821, and the first patient admitted on September 1st of that year. It was three weeks later before the second patient applied.

Dr. James Jackson and Dr. John C. Warren, the founders, became respectively the first physician and the first surgeon of the hospital. Twenty-two patients had been admitted before January 1, 1822; 121 were cared for during the next twelve months. One hundred years later, the corresponding figure was 6,659. In 1848 additions were made to the two wings of the building, increasing its capacity from 93 beds (the original number) to 140. The first additional building was erected in 1854, and constituted a separate ward "for cases of a foul and dangerous nature to relieve and secure other patients from discomfort and risk."



John C Warren

On October 16, 1846, the first public demonstration of the power of sulphuric ether to create insensibility to pain during surgical operation was made in the amphitheatre of the Bulfinch Building. The patient was Gilbert Abbott; the diagnosis, tumor of the neck. Dr. William T. G. Morton, at his own request, was permitted by the operating surgeon, Dr. John C. Warren, to administer the ether in accordance with his recent discovery. The experiment was a complete success the patient declaring that he had "felt no pain." A new era in medicine began with this event, and the old operating theatre in the dome of the building—preserved in its original shape—has long been a Mecca for medical pilgrims. Years later, in 1908, through the efforts of Dr. J. Collins Warren, grandson of the long ago famous surgeon, the annual observance of "Ether Day" was established. The old amphitheatre was used as an operating room until the early part of 1868, when a surgical building was opened, and named the Bigelow Amphitheatre in honor of Dr. Henry J. Bigelow a noted surgeon of the staff.

"Outdoor patients" were probably received at the hospital early in its existence, though no definite reference to them is found in the annals of the institution until 1844. Two years later it was voted that books be "ordered to be kept as a record of all outdoor patients." In 1883 a building was erected exclusively for this class of patients. This served until 1903 when it was replaced by a very large and splendidly equipped building. With continued growth, however, and the establishment of many special clinics, this, too, has been outgrown, and the addition of an extra story is now contemplated.

During the '70s and '80s a group of "pavilion" wards sprang up. The first were built in 1873 and were the only ones of that type in this part of the world. In 1882 a Convalescent Home was opened for patients discharged from the hospital who had no suitable place in which to recover their complete strength. The funds for this building were raised largely at the suggestion, and through the efforts, of one woman, Miss Mary A. P. Russell. This "home" is in Waverley, Mass., on a part of the land to which the McLean Hospital was transferred in 1895.

In 1873 the Boston Training School for Nurses was established, and was allowed to practice nursing in this institution, but under very exacting rules and regulations. In spite of ample proof of its value within within the hospital walls, it was twenty-three years later that the school was formally taken over by the trustees, and became the Massachusetts General Hospital Training School for Nurses.

The Warren Library, for the use of patients, was established in 1841, when Dr. John C. Warren, already mentioned, made a gift of $1,000 as a fund "for the purchase of religious and moral books to be given to patients on leaving the hospital." Gradually the type of books has broadened, and their use has

extended to all persons connected with the hospital. It is no longer a *giving,* but a *lending* library, and is presided over by a trained librarian whose work bears a very vital relation to the treatment of patients. This was the first library of its kind in the country, if not in the world.

The Treadwell Library—the medical library—has been in existence for nearly eighty years, and stands today among the foremost of hospital medical libraries. It numbers some 12,000 volumes, and serves the needs of the scientific personnel of the institution. It is now housed in handsome quarters on the second floor of the Moseley Memorial Building erected in 1916. This building is the entrance to the hospital, and in it are located all the offices connected with administration. Rooms for the accommodation of house officers occupy the upper floors above the Treadwell Library. The Record Room is on the second floor, closely connected with the library, and here may be found clinical records dating from the day the hospital opened. Good records began with the first patient. Both Dr. Jackson and Dr. Warren set a high standard for this work, and it has been followed throughout. Such records offer much to medical history, and provide an unfailing source of information in the investigation of disease. Careful cataloguing has made them available, and no record has ever been destroyed.

Since 1900 a new Surgical Building has taken the place of the Bigelow Amphitheatre (although the name is still preserved); a Domestic Building, for kitchens, dining rooms and maids' quarters has been added; special wards for the care of dermatological and orthopedic patients have been erected; a second "Home" for nurses has appeared; and the Phillips House, an exclusive private ward, has been opened. The Pathological Laboratory has occupied a building by itself since 1896, and during this period has been under the able management of Dr. J. Homer Wright.

During the last two years the Bulfinch Building has been entirely fireproofed, the ells have been added at each end, largely for the accommodation of medical and surgical laboratories, and for the offices of certain staff members. There is now in contemplation a hospital for people of moderate means. This will be an eleven story building, and will be modern in every respect. It will fill a long felt need in the community. Other improvements are presenting, and are lacking only funds to be put into execution.

The disease now known as appendicitis was first correctly diagnosed by the late Dr. Reginald Heber Fitz, then microscopist to the hospital. The original manuscript of his famous paper on the Vermiform Appendix is preserved in the Treadwell Library. It was published in 1886 in the *American Journal of the Medical Sciences.*

The discovery of x rays was announced in December, 1895, and before the end of that year their use in the diagnosis of disease was undertaken at the Massachusetts General Hospital. Dr. Walter J. Dodd was then head pharmacist and photographer, and it was through his efforts that the first investigations were begun. He became a pioneer in this work, and finally died, in 1916, from the effect of burns received long before their danger was realized. His name is written in letters of gold in the hearts of his many friends. His last work was done overseas, with the first Harvard Medical Unit during the World War, and for this he received citation from the British Government.

In 1905 came the organization of Social Service. Dr. Richard C. Cabot was its founder and has been its inspiration during the twenty-one years of its existence. In the clinics of this Out-Patient Department he early recognized that the personal element enters largely into the treatment of disease; that it was futile, for instance, to recommend a long vacation to a patient for whom it was an absolute impossibility; or a surgical operation with its attendant difficulties to a woman—the mother of five or six little children, and with no one to care for them during the period of her incapacity—and he undertook the solution of the problem. The results of his work are too well known to need remark here, for Social Service has spread far beyond the confines of this country.

It was this same physician who began, in 1915, the circulation of the *Cabot Case Records,* in which clinical studies with discussion by groups of consultants are supplemented by postmortem findings. This publication, garnered from the clinical records of the hospital, goes far abroad and is of value not only to physicians and students singly, but it provides exercises in diagnosis for many groups of physicians in other cities, and in the rural districts of this and other countries. Three cases are published each week in the *Boston Medical and Surgical Journal.*

In 1911 the visiting staff of physicians and surgeons was entirely reorganized, and the first paid nearly full time member appointed, Dr. D. L. Edsall, now dean of the Harvard Medical School. The beginning of a new organization of research was encouraged by Dr. Edsall. Since then several men have received similar appointment, and the teaching element in the hospital has greatly increased.

A Consultation Clinic was opened in January, 1916, at which persons, recommended by their own physicians, and upon the payment of a nominal fee, may obtain the combined advice of different medical specialists now necessary for a thorough diagnosis and rational treatment of disease. This was an innovation in medical service, and has proved of value.

In the three wars which have occurred during the period of its existence, the Massachusetts General Hospital has been found ready and willing to contribute to the relief of suffering and wounded soldiers. In 1861 the secretary of the trustees was directed to communicate to His Excellency, Governor Andrews, the following vote, "That the Trustees of the Massachusetts General Hospital assure the Executive of the Commonwealth that, in the event of any diseased or wounded soldiers being returned to this city, they shall consider it their duty and privilege to extend to them all the succor and relief that may be within their power." Governor Andrews later expressed his high appreciation of the attentions rendered by the hospital to returned soldiers.

During the brief period of the Spanish War in 1898, tents filled with cots were put up on the lawns about the hospital, and every spare bed in the wards was utilized, for the care of men brought to this port in hospital ships. Typhoid fever and malaria were the prevailing disease. The surgical cases received were very few.

When the United States entered the World War, the Massachusetts General Hospital was one of the few large American hospitals ready to take the field with a fully equipped base hospital. The order to move came on July 9, 1917, and the unit started across seas under the command of Major Frederic A. Washburn, resident physician and administrator of this hospital. The unit was located in France, not far from Bordeaux, and here, under the direction of its commander, a military hospital of nearly one hundred wards, and approximately five thousand beds, grew up.

The splendid work accomplished by the entire personnel would fill an article by itself. On the day of the signing of the armistice there were 4,319 patients under care. The last members of the unit did not reach home until March 2, 1919. Graduates of this hospital served also with the British Army, and on the staffs of four other base hospitals besides its own. Of commissioned officers, the Massachusetts General Hospital supplied 275, and 290 nurses. The successor of United States Army Base Hospital No. 6 is General Hospital No. 6, now organized as a part of the Army Reserve for Medical Service in a future military emergency.

This article would not be complete without a mention of famous men who have served during their best years as physicians and surgeons. The name of Warren has always been found on the list—father, son and grandson—the last now retired from active service, but still on the Board of Consultation. Dr. James Jackson, contemporary of the first Dr. Warren, had no son upon whom his mantle might fall, but it has been honorably worn by Putnams and Minots —direct descendants of Dr. Jackson. In the far past appear the names of John Jeffries, Oliver Wendell Holmes, Jacob Bigelow, Henry I. Bowditch, Samuel Cabot, and many others who have made large contributions to the science of medicine. The late Dr. Herbert B. Howard, the predecessor of Dr. Washburn, present director of the institution, was one of the speakers at the opening of the Moseley Memorial Building, already mentioned. The following is quoted from his remarks: "About the time I came here as resident physician (1897), while on a visit to New York City, I met the senior surgeon to the Presbyterian Hospital. He asked me to name the surgeons at the Massachusetts General Hospital. I said: 'Dr. Porter, Dr. Warren, Dr. Beach, Dr. Homans, Dr. Cabot (Arthur T.), Dr. Richardson, Dr. Eliot, Dr. Harrington, Dr. Mixter.' He then said: 'Young man, there are many hospitals that have one or two such men, but there is no other hospital that has nine.' He might have added: 'Or that has six such physicians.'" The latter were then Dr. W. L. Richardson, Dr. F. C. Shattuck, Dr. Fitz, Dr. Cutler, Dr. Gannett, Dr. Vickery. In many instances, a father has been followed by his son, until the personnel of the hospital today, both medical and administrative, is like that of one great family.

Such men contribute the best that is in them, and pass on leaving the institution so much the richer. Tradition grows out of their lives and their deeds. As they go in and out of a great hospital, day after day and year after year, something of their personality passes into the institution itself, and out of it grows a splendid composite life.

News Items.

Plans for Accident Conference.—Plans for an accident prevention conference, to meet during the summer in Washington, D. C., are under consideration by Secretary Davis of the U. S. Department of Labor. All industrial and commercial enterprises of the country will be invited to send their representatives.

Institute of Euthenics at Vassar.—An institute of euthenics "for the study of certain phases of human relationship and environmental influences" will be held at Vassar College, Poughkeepsie, New York, July 8th to August 8th. The lecturers will include authorities of international reputation.

Visiting Psychiatrist in Boston.—The Boston Federation for Placement Work and the Massachusetts Society for Mental Hygiene have organized a cooperative plan, according to the *Mental Hygiene Bulletin*, whereby the services of a visiting psychiatrist will be made available to certain social service agencies in Boston. Dr. Elizabeth A. Sullivan has been engaged as visiting psychiatrist.

Wiesbaden Research Institute.—Wiesbaden, Germany, has perfected plans for a research institution for balneology and metabolism, to operate in close cooperation with the various scientific institutions of the health resort. The establishment of such an institution has long been advocated, not only by physicians, but also by administrative and industrial concerns as of importance from an economical as well as from a medical point of view.

Promotions at College of Physicians and Surgeons.—Dr. Louis Bauman, Dr. Henry T. Chickering, Dr. Robert L. Levy, Dr. I. Ogden Woodruff, associates in medicine, have been appointed assistant professors of clinical medicine; Dr. George C. Andrews, Dr. A. Benson Cannon, instructors in dermatology, to be assistant professors of dermatology; Dr. Hugh Auchincloss, associate professor of surgery, to be professor of clinical surgery; Dr. William C. Clark, associate professor of surgery, to be professor of experimental surgery; Dr. Fordyce B. St. John, associate professor of surgery, to be professor of surgery; Dr. George M. Mackenzie, assistant professor of medicine, to be associate professor of medicine.

Fiftieth Anniversary of Johns Hopkins.—The celebration of the fiftieth anniversary of the founding of Johns Hopkins University will take place on October 23rd. The chief events of the occasion will be the dedication of the new million dollar building of the School of Hygiene and Public Health; a series of conferences to be addressed by leaders in the social and natural sciences; commemorative exercises, and an alumni banquet. Among the speakers will be: Dr. Andrew Balfour, director of the London School of Hygiene and Tropical Medicine; Professor Neufeld, director of the Institute of Infectious Diseases, Berlin, who will deliver the De Lamar Memorial Lecture; Prof. Levy-Bruhl of the department of modern philosophy at the Sorbonne; Albert C. Ritchie, Governor of Maryland, a Johns Hopkins alumnus; Mayor Howard W. Jackson of Baltimore; Newton D. Baker, former Secretary of War; Prof. Edwin G. Conklin of Princeton University; Dean Gordon J. Laing of the Graduate School of Arts and Literature at the University of Chicago, and others. Dr. Ira Remsen, the only surviving member of the original faculty of the university, will attend the celebration.

Personal.—Dr. L. R. Thompson, of the U. S. Public Health Service, has been placed in charge of the study of effects of cotton dust upon the respiratory organs of workers now being conducted in Greenville, S. C.

Dr. Charles Bernstein, superintendent of the Rome State School, New York, will give a lecture course at the twelfth annual summer school to be held during July and August at the Rome State School.

Dr. Paul J. Ewerhardt has accepted the position of director of the extramural clinics of the Rhode Island Society for Mental Hygiene.

Jane M. Hoey, assistant director of the Welfare Council of New York City, is the only woman appointed by Governor Smith to serve on the recently named commission of eleven to examine the crime situation in New York State.

Dr. Shirley Wynn addressed the joint meeting of the New York Committee on Baby Health Stations and the New York Committee on Pre-school Clinics and Nutritional Classes of the Children's Welfare Federation at its June meeting.

Society News and Notes.

Meetings of the New York Academy of Sciences were discontinued at the end of May; they will be resumed in October.

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New York City's health demonstration in the Bellevue-Yorkville district, carried on under the auspices of the Milbank Foundation, has devoted the first year of its activities to coordinating various health and social agencies in that district. On June 1st the central offices of the demonstration were moved into a building of its own on Thirty-eighth Street near First Avenue. This building will house also the district offices of several of the cooperating agencies, as well as some of the clinics of the Department of Health.

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The board of directors of the International Narcotic Association has announced that the next world conference on narcotic education will be held in Philadelphia, July 5th-10th, with the Bellevue-Stratford Hotel as headquarters.

* * *

The Committee for the Elimination of Harmful Noises of the American Society of Safety Engineers has announced through its chairman, H. W. Mowery, that engineers, physicians, psychologists and psychiatrists, as well as the public, will be urged to join forces to devise means for protecting the health of Americans from the many harmful and unnecessary noises that prevail especially in our large cities. Plans for a country wide campaign toward this end are being made and will soon be announced.

* * *

The forty-seventh annual meeting of the International Hahnemannian Association will be held, July 1st-3d, in Philadelphia with the Bellevue-Stratford Hotel as headquarters. Among speakers from New York who will address the various sessions are Dr. Guy Beckley Stearns and Dr. John Hutchinson. Thursday, July 1st, will be devoted to the Bureau of Obstetrics and Pediatrics of the Association, and to the subject of materia medica; on Thursday evening the banquet of the American Institute of Homeopathy will take place. The Friday sessions will be devoted to the subject of homeopathic philosophy, to the Bureau of Surgery, and to an open meeting in the evening on the subject of Perfecting the Physician's Training. The Saturday morning session will be given over to the Bureau of Clinical Medicine of the Association.

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Graduates of the University and Bellevue Hospital Medical School, New York City, who are also members of the Phi Delta Epsilon Medical Fraternity, have organized the Beta Society, which will hold clinical and social sessions every month.

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The library of the New York Academy of Medicine has received as a gift from his widow the medical library of the late Dr. Nathan E. Brill.

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Among prominent physicians present at the recent forty-sixth annual reunion of the Alumni Association of Long Island College Hospital were Dr. Frank E. West, emeritus professor of medicine, and Capt. Richmond C. Holcomb, M.C., U.S.N., an alumnus.

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The Medical Society of the County of Kings has received the approval of the State Medical Society of New York for its new constitutional revision permitting the enrollment as associate members of laymen. Only those who are interested in scientific work or in the activities of the society will be accepted under the new provision.

* * *

A joint meeting of the American Psychopathological Association and the American Psychiatric Association was held Friday, June 11th, at the Waldorf Astoria, New York. The program of the morning session was as follows: Some Phases of Childhood Psychopathology, by Dr. Lawson G. Lowrey; Sex Behavior of Idiots, by Dr. Howard Potter; Hysteria and the H-R Syndrome of Kretschmar, by Dr. Edward E. Mayer; Incipient Schizophrenia; an Important Clinical Entity, by Dr. Harry S. Sullivan. The papers for the afternoon are as follows: Organic versus Psychogenic Factors in the Functional Neuroses, by Dr. D. J. McCarthy; Freud, McDougall, and the Oedipus Complex, by Dr. L. E. Emerson; Word Blindness and Word Deafness in Children and Their Relation to Intelligence and Behavior, by Dr. E. Bosworth McCready; Psychological Dynamics and Organic Epilepsy, by Dr. L. Pierce Clark; The Reabsorbed Affect and Its Elimination, by Dr. Trigant Burrow.

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The two Harrington Lectures for 1926 before the Medical Society of the County of Erie were delivered at the Medical School of the University of Buffalo by Dr. Charles R. Stockard of New York City, whose subjects were the Mechanism of Inheritance, and Inheritance and Development.

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Announcement has recently been made that the first library of medical films in the world will soon be established in New York City. The films will consist of many hundreds of reels of pictures taken by physicians at work in clinics and will demonstrate the latest discoveries in the field of science, particularly medicine. The films will be sent to all parts of the globe for educational use. The announcement was made by Dr. Simon P. Goodhart, professor of clinical neurology at Yale University before the Yale Medical Society.

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The American Stomatological Association has issued a circular informing those interested in the courses of instruction at the Post-Graduate Medical School of Stomatology, which functions under the Association's auspices, that the mailing of the school catalogue has been suppressed pending a decision as to whether the Post-Graduate School, chartered by the University of the State of New York, is entitled to indicate on the cover of its catalogue "Chartered by the University of the State of New York," as well as whether the same designation on the cover of the catalogue is sufficient reason for the recommendation to the Regents to revoke the charter of the school. If this new ruling stands, the school will shortly issue a second edition of the catalogue without the above legend on its cover, and this will be mailed to prospective students.

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At the recent annual meeting of the Western Physiotherapy Association, the following officers were elected: president, Dr. Lynne B. Green, of Kansas City, Mo.; first vice-president, Dr. J. E. G. Waddington, of Detroit; second vice-president, Dr. O. M. Moore of York, Neb.; secretary, Dr. Charles Wood Fassett, of Kansas City, Mo.; treasurer, Dr. W. P. Grimes, also of Kansas City, and registrar, Dr. E. J. Leigh, of Hiawatha, Kan. The Board of Trustees consists of Dr. A. David Wilmoth, of Louisville, and Dr. F. E. Dillenbeck, of Eldorado, Kan.

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At the last annual stomatological convention held in New York City at the Academy of Medicine, the following were elected to honorary membership in the American Stomatological Association: Sir William Arbuthnot Lane of London, England; Prof. A. Cieczynski of Lwow, Poland; Prof. Coen Cagli of Rome, Italy; Prof. A. Herpin of Paris, and Prof. Joseph Szabo of Budapest.

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The National Association for the Study of Epilepsy held its twenty-fifth annual meeting at the Waldorf Astoria, New York, June 7th-8th. Among those who presented papers were Dr. Wuth, Dr. Clark, Dr. Patterson, Dr. Jelliffe, Dr. Clausen, Dr. Alford, Dr. Brill, Dr. Elsberg, Dr. Gordon, Dr. Sullivan, Dr. Peckham, and Dr. Hodgkins. The meeting immediately precedes that of the American Psychiatric Association, and American Psychopathological Association.

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Physical education societies in Czechoslovakia have received from the ministry of public health of that country subsidies representing a total of 4,450,000 crowns to be devoted to furthering their work. In addition a sum of 1,800,000 crowns has been granted to assist in building gymnasiums, playing fields, and training grounds of various kinds. The Czechoslovakian people are greatly interested in the physical culture movement, as is evidenced by the membership of the Association of Workmen's Gymnastic Societies which number 96,606 persons, and that of the Federation of Workmen's Gymnastic Societies, with 94,981 members.

Book Reviews

THE RESPIRATORY FUNCTION OF THE BLOOD

The Respiratory Function of the Blood. Part I: Lessons from High Altitudes. By Joseph Barcroft. Cambridge: The University Press, 1925. Pp. 207.

This book is not only an authoritative monograph on the physiological reaction and adaptation of the human body to high altitudes, but a fascinating narrative as well. It is based largely on the 1921 expedition to the Andes in central Peru, led by the author. Owing to the rapid advance of knowledge, Mr. Barcroft found it impossible to revise his original volume on *The Respiratory Function of the Blood* for a second edition. He therefore decided to break up the work into a series of manageable units, of which this is the first volume. Following a clinical description of mountain sickness and of the native dwellers at high altitudes, there are chapters on the color of the face and its significance, muscular exercise, the hydrogen ion concentration of the blood, the pulse, the circulation rate, the heart, the red corpuscles, and the mind. The final chapter discusses all the facts on acclimatization. The oxygen deficiency of the atmosphere results in an increased total ventilation of the lungs with a resultant drop in the carbon dioxide content of the blood. There is an increase in hemoglobin and in the number of red blood cells, as well as a shift in the dissociation curve. The actual symptoms of mountain sickness are due to oxygen want in the medulla. In the appendix are found notes on the physiological difficulties in ascending Mount Everest.

This book is to be recommended to the general medical public, as well as to the specialist, as a very readable and thorough summary of certain aspects of the respiratory function of the blood, as illustrated by experiments and observations at high altitudes.

TREATMENT OF GONORRHEA IN THE MALE

Die medikamentöse Behandlung der Harnröhrengonorrheoe des Mannes und deren pharmakologische Gründlagen. By Dr. Alfred Perutz. With 13 Illustrations. Berlin and Vienna: Urban & Schwarzenberg, 1925. Pp. 266.

The author stresses the importance of a knowledge of the nerve supply of the genitourinary apparatus in the male, with special reference to its particular reaction towards the drugs and chemicals employed in the treatment of gonorrhea. This is in keeping with the main purpose of the book, namely to consider the therapy of gonorrhea in the male from the viewpoint of medicopharmacology. The specific action of well known and some obscure drugs is considered at length, the author emphasizing the consequences of producing antagonistic effects by the careless employment of chemical bodies which may be incompatible or antagonistic in therapeutic effect.

Active and passive immunization and the serodiagnosis of gonorrhea are discussed at length. Parenteral protein therapy, widely employed in Germany, constitutes a most valuable chapter. Abortive methods are thoroughly considered, though we fail to find any mention of the "sealing in" method favored in this country.

A bibliography with approximately a thousand names adds value to the work. It is gratifying to find a few American names in the list; this is somewhat unusual in foreign medical works of this kind.

The work possesses considerable value to the venereologist. It is fully up to date and international in scope. American chemicals are intelligently and fairly considered. The German reading urologist will find the work most useful.

PULMONARY ARTERITIS

La Arteritis Pulmonar y su Cuadro Clinico. By F. C. Arrillaga. Buenos Aires: Pedro Garcia, 1925. Pp. 274.

This monograph represents a comprehensive study of the syndrome due to sclerosis of the pulmonary arteries, often called Ayerza's Disease. This illness is characterized by intense cyanosis, enlargement and failure of the right ventricle and a characteristic bulging of the enlarged pulmonary artery on the röntgen plate, in the absence of signs of mitral stenosis or pulmonary emphysema, which might produce a similar picture. It is usually syphilitic in origin and Arrillaga conceives of the process as a luetic bronchopneumonia which secondarily involves the smaller pulmonary arteries. He presents an excellent historical résumé with references to all of the important literature. The pathological anatomy is discussed in the light of many autopsies and is well illustrated. Many case reports are included to elucidate the symptomatology. The reproductions of characteristic x rays are particularly valuable. The striking appearance of the patients, which has given them the picturesque name of *cardiacos negros,* is well shown in colored photographs. Dr. Arrillaga is to be congratulated on the production of an excellent monograph, and the publisher on the general makeup of the book. It is to be hoped that it will be translated into a language more widely read than Spanish.

FACTS ON THE HEART

Facts on the Heart. By Richard C. Cabot, M. D., Professor of Medicine and Social Ethics, Harvard University. With 163 Illustrations. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 781.

This book resembles in many respects Dr. Cabot's well known volumes on differential diagnosis. It is based on a review of 4,143 lesions in 1,906 necropsied cases of heart disease done at the Massachusetts General Hospital between 1896 and 1919. In the initial chapter there is a brief review of the material studied. It is remarkable that in Table I, in which the whole material is summarized, not a single case of socalled emphysema heart, that is, hypertrophy, dilatation and failure of the right ventricle secondary to pulmonary emphysema, is recorded, while there are 156 cases of hypertrophy and dilatation of the heart unaccompanied by other lesions, and 668 cases of hypertrophy and dilatation associated only with arteriosclerosis. Now it is common knowledge that right ventricular hypertrophy and dilatation secondary to pulmonary

emphysema is very common, and that socalled idiopathic hypertrophy is very rare, and that arteriosclerosis alone rarely causes cardiac hypertrophy. This table thus illustrates the inevitable and almost insuperable difficulties involved in any such study in which material studied and gathered by many men, with varying standards and varying nomenclature, is integrated into a comprehensive study by one man. From a statistical point of view there are bound to be many inaccuracies. Another illustration of this difficulty is the group of cases classed as nephritis and arteriosclerotic degenerated kidney. There is no clear distinction made between glomerulonephritis, arteriosclerosis with hypertension, and the gross scars following sclerosis of the larger renal arteries.

Subsequent chapters are devoted to a more detailed study of rheumatic, syphilitic, and hypertensive heart disease, myocarditis, angina pectoris, endocarditis, pericarditis, and thyrocardiac disease. Many interesting case reports with necropsy findings are included in each chapter. The final chapter is a summary of the book. Some of the conclusions are not quite convincing. From an extensive necropsy experience in a large hospital with a rich cardiac material the reviewer cannot agree that over one half of cases of mitral disease are not recognized during life. It is certain that Dr. Cabot's personal percentage of correct diagnoses of this condition is much higher, and so is that of many competent careful physicians. With most of the other conclusions the reviewer is in accord. Dr. Cabot found hypertensive heart disease twice as common in men as in women, whereas, in the experience of the reviewer and of others, about two thirds of the cases of hypertension occur in women. There is much that is of value in the book, a vast amount of material sifted and classified and illuminated by critical comments of an experienced clinician. It suffers from the inevitable defects and inaccuracies of a work that is a compilation of the observations of many men, extended over a period of twenty-five years, during which time the concepts of heart disease and the terminology applied to it have undergone such fundamental changes.

REJUVENATION

Scientific Rejuvenation Without Operation. The New Science of Radiendocrinology in Its Relation to Rejuvenation and the Relief of Common Ailments Based on the Radiation Technic of Dr. Eugen Steinach. New York: Medical Science Publishing Company, 1923. Pp. 64.

The author of this little book is not named—except that he is termed "one of America's foremost radiendocrinologists," who wrote the book "in collaboration with associated physiologists, endocrinologists and physicists."

However, this book is only the "popular edition" of one that was published in 1923 by the "Medical Science Publishing Company," and its author was named there as Dr. Herman H. Rubin.

There may be two reasons for omitting the author's name in the new edition: he may feel ashamed to admit authorship of the book—if this is so, he is right; or it may be that he did not want any other name to appear on the title page than the name of Dr. Eugen Steinach of Vienna. Perhaps to make it appear to a careless reader that Steinach himself wrote the book? If the latter, however, is true, its criticism would belong in a law court and not in a medical review.

The little book itself seems to have only one purpose: to emphasize the alleged fact that radiation of the endocrine glands, with an apparatus called radiendocrinator, is superior to all other methods of "rejuvenation," which by operation or by x ray, and that practically all ailments of the human body can be cured with this apparatus, which "for the ionization of the ductless glands by gamma rays" is said to contain radioactive elements "one hundred times more active and one hundred times more expensive than radium."

After explaining some fundamental facts of the endocrine glands and their functions in a language more than popular, the author discusses "rejuvenation" treatments, especially the Steinach operation (vasoligation). He further attempts to explain "ionization of body tissues," ascribing to Steinach the discovery of "radiation rejuvenation" and finally comes to the description of the aforementioned radiendocrinator, which he calls "the most efficient device yet produced for the Steinach treatment of rejuvenation by radiation." He further describes it as an "extremely complex apparatus," "a silent generator of stupendous electronic energy, having several times the voltage of the most powerful x rays ever produced." In spite of this alleged power of the apparatus, the book goes on to explain that the devices are "primarily worn at night while asleep" and that they furnish a "home rejuvenation treatment."

It must be left to the reader to form an opinion as to the real physical properties of the radiendocrinator and its scientific justification.

In the opinion of radium experts, a tremendous amount of radium would be necessary to produce sufficient gamma rays to—for instance—reach a woman's ovaries at a depth of from seven to ten centimetres underneath the skin. It is utterly inconceivable that any apparatus could contain any such amount of radium, but still the treatment of the ovaries is one of the chief tasks of the radiendocrinator.

In the last chapters claims are made of alleged cures of various ailments, however too unfounded to justify a more detailed review.

After reading of about sixty diseases and symptoms as successfully treated by radiendocrination, a paragraph at the beginning of the book takes on special significance. It reads: "The publishers of this book have received so much correspondence from readers concerning the subjects contained herein that they take this opportunity in this issue of explaining that the special means for utilizing the Steinach technic can be obtained only from those holding rights in this country, the American Endocrine Laboratories. *Sapienti sat.*

No laboratory tests, no animal experiments, no carefully written up case histories, no control photos and no regular scientific publications exist—as, for instance, for the Steinach operation and for the x ray treatments of endocrine disorders, to support the claims for the "radiendocrinator." Only Steinach's good scientific name is used to lend weight to utterly unsupported statements. Again and again the reader is made to believe that Professor Steinach himself is

using "the radiation technic" that is expounded in this publication. But this is utterly untrue.

"The Steinach method of rejuvenation" consists of vasoligation in men and chiefly of diathermy treatments in women. Steinach's alleged experiments and treatments with "endocrine ionization" is a pure fabrication. A publication like this little book is a great misfortune and does tremendous harm. It is this kind of a publication that is responsible for the antagonism of the medical profession towards certain phases of endocrinology and especially towards "rejuvenation" and the Steinach methods, and for its misconceptions and distrust prevailing among the intelligent laity.

On the whole, the little book can only be called a most astonishing product of charlatanism, speculating on the power of advertising methods and on the credulity of an uneducated public.

ACTIVITIES OF THE ROCKEFELLER FOUNDATION

Annual Report of the Rockefeller Foundation for 1924. Illustrated. New York: Rockefeller Foundation, 1926. Pp. 447.

During the year 1924 the International Health Board of the Rockefeller Foundation, the China Medical Board, the Division of Medical Education, and the Division of Studies took part in the inauguration or development of nineteen different lines of activities along medical lines, which may be briefly summarized as follows:

1, Helped finance a plan for establishing an international abstract journal of the biological sciences; 2, began to issue bulletins reporting progress of medical education in many countries; 3, helped to spread internationally knowledge about medical equipment and teaching methods through surveys by staff members, commissions of scientists, visiting professors, and traveling fellows; 4, hastened developments in the medical schools of the Universities of Oxford, Cambridge, Edinburgh, Wales, Montreal, McGill, Sao Paulo, Hongkong, and Siam, and of the American University of Beirut; 5, maintained a modern medical school and teaching hospital in Peking; 6, aided three other medical schools and seventeen hospitals in China; 7, helped to improve the teaching of physics, chemistry, and biology in two Chinese and nine foreign institutions in China and in the Government University in Siam; 8, had a part in the development of professional training for sanitarians and hygienists at Harvard and in schools and institutes in London, Prague, Warsaw, and Sao Paulo; 9, gave funds for nursing education at Yale and in schools and hospitals in Brazil, France, Yugoslavia, Poland, and the Philippines; 10, kept a mobile staff on guard against yellow fever in Mexico and Central America; 11, at the request of Brazil, joined in an attack upon this disease from eleven centres along the coast; 12, helped to show the possibilities of malaria control in thirteen American states and made malaria surveys or studies in Haiti, Porto Rico, Nicaragua, Brazil, Italy, Palestine, Queensland, and the Philippines; 13, either continued or began antihookworm work in conjunction with thirty-two states and countries in the West Indies, Central America and Mexico, South America, Europe and the Far East; 14, contributed to the budgets of rural health services in 207 counties in twenty-four American states and in New Brunswick, Brazil, France and Czechoslovakia; 15, continued to aid the epidemiological intelligence service of the Health Section of the League of Nations; 16, contributed to the League of Nations' international study tours or interchanges for ninety-nine health officers from twenty countries; 17, provided directly or indirectly fellowships for 864 individuals of thirty-three different nations; 18, lent staff members and made minor gifts to many governments and institutions for various kinds of counsel and aid; 19, assisted mental hygiene projects both in the United States and in Canada, demonstrations in dispensary development in New York City, the growth of antituberculosis work in France, and other undertakings in public health, medical education and allied fields.

The report of the foundation describes and discusses in some detail each one of these various activities, with excellent illustrations which add interest to the text, and a large number of charts and statistical tables, maps and plans. The president, Mr. George E. Vincent, in closing his review of the work for 1924, writes: "This summary story of a year's activity records cooperation with thirty-two commonwealths of the United States of America and with seventy-seven other states and countries. . . . The Rockefeller Foundation within its chosen field seeks to share in the common task as a means of realizing the purpose of its charter, the wellbeing of mankind throughout the world."

INTESTINAL TUBERCULOSIS

Intestinal Tuberculosis. Its Importance, Diagnosis, and Treatment. A Study of the Secondary Ulcerative Type. By Lawrason Brown, M.D., and Homer L. Sampson. Philadelphia and New York: Lea & Febiger, 1926. Pp. 304.

This is another of the monographs that fills a unique niche in medicine. The nearest approach to covering the same subject is Fenwick's *Dyspepsia of Phthisis,* now over thirty years old. A comparison of the two works offers a striking lesson in the growth of our knowledge—a growth due primarily, of course, to the introduction of the x rays.

The röntgen studies appear, on the whole, unusually sound. It might be desirable to devote more space to the differential diagnosis between tuberculous and nontuberculous (simple) colitis, the latter being a far more common condition than is generally realized. It must be granted, however, that the checks on the work, as far as the authors' material permits, seem carefully planned and well executed.

LEAD POISONING

Lead Poisoning. Medical Monographs. Vol. VII. By Joseph C. Aub, Lawrence T. Fairhall, A. S. Minot and Paul Reznikoff. With a Chapter on the Prevalence of Industrial Lead Poisoning in the United States by Alice Hamilton. Baltimore: The Williams and Wilkins Company, 1926. Pp. 265.

In this useful book are treated the chemistry, pathology, and physiology, as well as the clinical aspects of lead intoxication. The chapter on history is exceedingly interesting. The work appeals to many interests—the clinician, the biochemist, the physiologist, the industrial chemist, the sanitarian.

The style is exceedingly clear and easy to follow. The absence of an index is an obvious disadvantage. It would be, to our mind, at least as useful as the excellent bibliography which accompanies the volume.

Medicoliterary Notes.

The publishing firm of Paul B. Hoeber, Inc., New York City, has purchased the *American Journal of Surgery,* a medical magazine that has existed for more than twenty years. Dr. Walter M. Brickner, editor in chief of the journal since its establishment, will continue to hold the position, assisted by a staff of distinguished physicians and surgeons.

* * *

Insanity is increasing in Vienna. Statistics just issued show a rise of fifteen per cent. over last year. A large percentage of the new cases are women. Doctors ascribe the phenomenon to nerves weakened by the strain of postwar worries now breaking down as people of mature age continue to brood over their past troubles.—*N. Y. Times.*

* * *

Two important articles in *Mental Hygiene* for April are the Significance of Psychoanalysis in Social Life, by Otto Rank of Vienna, and Insanity and Crime, by Dr. William A. White of St. Elizabeth's Hospital, Washington, D. C.

* * *

A decree recently issued by the government of Bolivia requires that children of twelve and under can attend moving pictures only on holidays, and then are limited to seeing the pictures authorized by the police. It is believed that this move will safeguard in some degree the morals and welfare of the younger children.

* * *

Sylvia Townsend Warner, author of *Lolly Willowes,* the story of a selfeffacing spinster who sought escape from her life of English propriety by becoming a very respectable and proper witch, is a niece of Arthur Machen, a fact which could escape no reader of her book who is acquainted with the work and philosophy of her uncle.

* * *

According to a recent announcement by Dr. Ko-Kuel Chen, pharmacologist of the University of Wisconsin, new uses have been discovered for an ancient Chinese drug called ephedrine, indicating that it is a powerful aid in raising blood pressure, in the treatment of asthma and colds, and as an anesthetic. Ephedrine has been in use in China for more than five thousand years, according to Dr. Chen, who asserts that he has found a new method for isolating the drug, which has been submitted to tests at the Mayo Clinic and at the University of Pennsylvania.

* * *

The *Long Island Medical Journal* for February contains an interesting article by Charles Frankenberger, Librarian of the Medical Society of the County of Kings, Brooklyn, entitled How to Consult the Medical Library and Medical Literature. It is a practical paper containing many helpful suggestions for those who have occasion to use or to consult medical material.

* * *

In times of peace soldiers have the lowest mortality rate of any class of men, the death rate being only five in every thousand. Probably clergymen are popularly considered as leading the most placid lives in modern life; yet a comparison of rates shows that the annual death rate among the ministry is more than twice that among soldiers, being eleven in every thousand.

* * *

Psychoanalysis has finally appeared on the movie screen. In Berlin a film was recently shown called the *Secret of the Soul,* which is reported to illustrate Freud's method and technique in psychological analysis. Freud himself was present to describe the case. Work on the film was begun by the late Dr. Carl Abraham, and completed by Dr. Hans Sachs.

* * *

In the new medical school and hospital of the University of Colorado at Denver, the color problem for walls and furnishings has been worked out in detail. The x ray room has walls of a violet red, which has great light absorption power, yet exerts a quieting influence on the patient, and is slightly stimulating to the operator. In the operating theatre a soft gray is used. The wards for disturbed patients have yellowish green walls because this color has been found to have a tranquilizing and cheerful influence. Rooms with a northern exposure have yellow walls, and those with a southern outlook with sunshine gray walls and furnishing.

* * *

Two old sun dials recently discovered in Ireland are reported to prove that daylight saving time is no new practice, but existed for many hundreds of years before the twelfth century A. D. The ancient Irish hour varied in length, according to those who have studied the dials, with the season of the year and the latitude. In Ireland the daylight hour in midsummer was eighty minutes, and in winter only forty.

* * *

The Renaissance Theatre of London has revived the play entitled, the *White Devil,* by John Webster, who was the father of John Webster, fifth colonial governor of Connecticut, and founder of the Webster family in America. The late Dr. David Webster, for many years head of the Eye and Ear Hospital, New York, was of the Tory Canadian branch of this family. Dr. John Stuart Thomson, literary executor of the Webster Thomson family, is the author of a number of books and articles on the opium evil, with which he had extensive contact in its native lair as manager of the Pacific Mail and other steamship companies at Hong Kong. Dr. Thomson will be one of the chief speakers at the world conference on opium which has been called by Congress to be held in July in Philadelphia.

* * *

At a recent theatrical performance in Leningrad, which included a William Tell act in which a performer shot an an apple from his brother's head, a bullet went wild and struck the orchestra leader, Sergius Novitsky, in the mouth, shattering some of his teeth and tearing away part of his nose. Novitsky retained his selfpossession to such an extent that no one in the audience was aware of the accident, and he continued to conduct his orchestra until loss of blood caused him to collapse.

* * *

Evidence that the bodies of men and animals are not quite so exacting in their protein food demands as biochemists had supposed has been obtained from experiments in nutrition recently performed at the University of Illinois by Dr. William C. Rose and Dr. Gerald J. Cox. These experiments resulted in the successful use of an artificial product to replace histidine, which was previously thought to be one of the twenty building stones of protein essential to the growth and development of men and animals. The successful substitute is imidazole lactic acid.

* * *

A Dutch scientist, assuming that talking fatigues women less than it does men, explains this by the statement of two facts: first, that the greater the length of the vocal cords, the more energy is required to produce a sound; second, that the vocal cords of women are shorter than those of men.

* * *

Diseases of bees, silkworms, fishes and even plants, caused by protozoa, may be banished by means of oxygen applied under pressure, according to Dr. L. R. Cleveland, of the Harvard University Medical School. Dr. Cleveland's earlier work on the effects of oxygen on protozoa and their insect hosts won for him half of the annual prize of the American Association for the Advancement of Science at its Washington meeting in 1924.

* * *

Recent publications of interest to the medical profession are: *Strength of Religion as Shown by Science,* by Dr. Charles E. de M. Sajous (F. A. Davis Company); *Light and Heat,* by M. Luckiesh and A. J. Pacini (Williams & Wilkins, Baltimore); *The Adventures of Old Age,* by Francis Bardwell, with an introduction by Dr. Richard C. Cabot (Houghton Mifflin); *Your Food and You,* by Ida C. Bailey Allen (Doubleday, Page); *Reluctantly Told,* by Jane Hillyer, with an introduction by Dr. Joseph Collins; *Our Minds and Their Bodies,* by John Laird (Oxford University Press); *Betterman II on the Business of Medicine,* by Dr. Charles E. Blanchard (Medical Success Press, Youngstown, O.); *Through a Consulting Room Window,* by Dr. W. C. Rivers of London; *The Theory of the Gene,* by Thomas Hunt Morgan (Yale University Press); *Healthful Control in Mercantile Life,* by Arthur Brewster (Harper); *Havelock Ellis,* by Isaac Goldberg (Simon & Schuster); *Outline of Abnormal Psychology,* by William McDougall (Scribner).

American Medical Association

Seventy-seventh Annual Meeting, Dallas, Texas, April 19-23, 1926

(*Concluded from page 777*)

The Scientific Proceedings

SECTION ON RADIOLOGY

CHAIRMAN, DR. A. C. CHRISTIE, OF WASHINGTON.
SECRETARY, DR. W. J. HUBENY, OF CHICAGO.

Radon as a Palliative Agent in the Treatment of Intraoral Cancer.—Dr. Frank E. Simpson, of Chicago, said that there were two phases to intraoral cancer—the intraoral lesion and the adjacent lymph nodes in the neck. In the treatment of intraoral cancer, the distinctly operable case might receive the benefits of surgery, all other cases might be treated with radium. Operable lesions were small, well localized and easily accessible. Inoperable lesions were larger, ill defined and inaccessible. The use of not less than one thousand mc. of radon was necessary for surface applications to the intraoral lesion. In certain cases and always in tongue cancer he advised, in addition, the insertion of bare glass tubes containing from 0.5 to 1 mc. of radon. Nurses and others who handled large quantities of radium must protect themselves against its local and constitutional effects. The adjacent lymph nodes might be treated by the surface application of not less than one thousand mc. of radon. The general results in fifty-six cases showed twenty patients (35.7 per cent.) had been living and well for a period of from three to five years.

Hodgkin's Disease and Lymphosarcoma, With Especial Reference to Their Treatment by Radiation.—Dr. Curtis F. Burnam, of Baltimore, Md., said that his paper dealt for the most part with the treatment of Hodgkin's disease, lymphogranulomatosis. In reviewing the history, symptomatology, gross and microscopical anatomy, he pointed out that certain glandular forms of tuberculosis and syphilis, true leucemia, and pseudoleucemia, as well as endothelioma, can only be definitely excluded by a biopsy and microscopical study of the tissue. Blood examinations are essential in differentiating the leucemia, and, while not characteristic for Hodgkin's disease, are helpful. The etiology is still in the dark. The disease bears the earmarks of a chronic infection. In spite of the negative inoculation results, he said that a considerable number of authorities still hold to a tuberculous association of some sort. The pleomorphic diphtheroid organism, described by Bunting and Yates, does not seem to have a definite causative relationship. The cardinal symptoms are gland and splenic hypertrophies, fever, pruritus, and weakness. To these are superadded the pressure phenomena and physiological disturbances, varying greatly with the part of the body involved. The pathology fixed by Sternberg and Dorothy Reed is established.

No specific drug or serum has been discovered. Arsenic in many forms has been used and often helps. Among general measures, removal of focal infection, rest and nutritional care, are of distinct value. Operative surgical removal should be limited to cases where only a single, easily removable group of glands is involved. X radiation, first employed by Pusey, in 1902, is the most generally used method of treatment. With the exception of the acute fulminant cases, it nearly always improves conditions. In many cases it leads to temporary, clinical cures, and in a few cases to freedom from all symptoms for a time long enough to be regarded as permanent. The author stated that he had treated his own cases almost entirely by the radium pack method, which he described in detail as well as x ray methods. He was inclined to believe that radium was somewhat more effectual and less likely to do injury than x ray.

Of 149 patients treated and observed for over one year, 112, after periods varying from one to nine years, have died of the disease; nine of the remaining patients are living in periods varying from two to six years, with evidence of the disease; two patients died in the ninth and tenth years without evidence of the disease, and apparently from other causes; twenty-six patients are living and clinically well; eleven of these twenty-six patients for periods ranging from five to ten years, and five of the eleven cases, for periods of more than nine years.

SECTION ON PATHOLOGY AND PHYSIOLOGY

CHAIRMAN, DR. HARRY J. CORPER, OF DENVER.
SECRETARY, DR. JOSIAH J. MOORE, OF CHICAGO.

Absorption from the Lower Respiratory Tract Under Normal and Pathological Conditions.—Dr. H. J. Corper, of Denver, Col., said that absorption and resorption of liquids from the lower respiratory tract, the lungs and pleura, followed the main principles of absorption in other parts of the human economy, but the anatomical structure and physiological function lend to these tissues differences which are still to be determined. The rapidity of absorption of crystalloids from the lungs and pleura exceeded that from the peritoneum and subcutaneous tissues. Absorption of crystalloids was more rapid from the lungs than from the pleura and it was possible that absorption from the lungs in part accounted for the rapidity of absorption from the pleura. The rapidity of absorption of liquids from the lungs was probably to a great extent accounted for by the vascularity and large total surface of the terminal respiratory divisions—the alveoli. The absorption of crystalloids by the pleura was not influenced by artificial pneumothorax instituted shortly before and resulting in a decided collapse of the lungs. Acute inflammatory conditions affecting the pleura, produced by chemical means, retarded the absorption of crystalloids from the pleura. Acute inflammatory conditions affecting the pulmonary parenchyma retarded the absorption of crystalloids from the lung after intratracheal injection.

Grading of Carcinoma and Its Practical Application.—Dr. Albert C. Broders, of Rochester, Minn., said that carcinoma was graded by cell dif-

ferentiation, that process closely related to evolution by which cells advance from an immature to a mature or specialized state, or acquire a distinct and separate character. By comparing differentiated and undifferentiated cells of a malignant growth the malignancy may be properly graded on a basis of one to four. Grade one represents the most differentiated and the least malignant, and grade four the least differentiated and the most malignant. Other things being equal, about ninety per cent. good results may be expected in cases graded one; sixty per cent. in cases graded two; twenty-five per cent. in cases graded three; and ten per cent. in cases graded four. There was practically never metastasis from malignant tumors graded one, while the large majority of those graded four have metastasized by the time they reached the examining physician.

SECTION ON PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

CHAIRMAN, DR. MATTHIAS NICOLL, JR., OF ALBANY.
SECRETARY, DR. W. F. DRAPER, OF WASHINGTON, D. C.

Is Trachoma a Deficiency Disease?—Dr. B. Franklin Royer, medical director of the National Committee for the Prevention of Blindness, said that trachoma usually began with an upper lid pathology, with bulbar infections developing secondarily from the traumatism. The disease was slow in progress and advanced by stages over a period of years. Spontaneous cure might often result. With unfavorable conditions, serious consequences might require prolonged treatment or cosmetic surgery. In the later stages severe suffering was noted, and serious impairment of vision or blindness might result. Geographically, the disease was not a problem except with people seasonally or habitually underfed. Public health authorities heretofore had overvalued governmental declarations stating that trachoma was a "dangerous infectious disease." Few reports of contagiousness or of transmissibility could be found in the literature that did not include the possibilities of transmitting many sorts of infections continuously associated in the trachomatous eye.

Modern studies to determine etiology should undoubtedly heed the lessons of research chemists determining conditions permitting deficiency diseases to develop. Epidemiological studies and etiological studies, Dr. Royer said, had so far been barren of results. New studies were needed which should include exact details of food habits in trachomatous families, both among the afflicted and in those escaping the disease, several years prior to and coincident with the first manifestations of eye trouble. Researches were needed comparable to those in producing xerophthalmia, but perhaps supplemented, short of this serious condition, by anticipating lowered resistance in lid tissues, and then, instead of carrying tissue change on further by withholding the essential element of food, to begin regular systematic irritation over long periods of time, concentrating the irritation upon the upper lid lining to determine if a pathology comparable to trachoma might be developed. Trachoma, he said, was a great international scourge and should be a challenge to the great foundations interested in international health problems.

SECTION ON UROLOGY

CHAIRMAN, DR. B. A. THOMAS, OF PHILADELPHIA.
SECRETARY, DR. GEORGE GILBERT SMITH, OF BOSTON.

The Pyelographic Diagnosis of Renal and Pararenal Neoplasms.—Daniel N. Eisendrath and Irvin S. Koll, of Chicago, said they believed ureteropyelography to be almost indispensable in the differential diagnosis of renal and pararenal neoplasms from those arising from intraperitoneal structures. There were certain pyelographic changes which were of unquestioned value in the diagnosis of renal neoplasms and polycystic disease. To these deformities the terms dragon, spider, etc., had been applied. The presence of a filling defect was equally as typical of neoplasm if one could exclude the presence in the renal pelvis of blood clots, fibrinous exudate, etc.

Deviation of the ureteral (opaque) catheter or of the ureterogram was found in both pararenal and intrarenal neoplasms. In pararenal (retroperitoneal sarcomata, cysts, etc.) there was no change in the contour of the pyelogram but the latter might reveal evidences of rotation or displacement of the kidney. In intrarenal neoplasms, on the other hand, there were always pyelographic changes in addition to the ureteral displacement. Familiarity with the many variations in normal pyelograms, especially of the socalled pseudospider type, was essential in order to avoid errors in pyelographic interpretation. Certain inflammatory (nonmalignant) conditions either of the fatty capsule (suppurative or fibrous perinephritis) or of the parenchyma of the kidney (atrophic pyelonephritis, tuberculosis) might give rise to pyelographic changes greatly resembling those of neoplasms.

Diagnosis of Renal Tuberculosis.—Dr. William E. Stevens, of San Francisco, said that notwithstanding tuberculous infection of the kidney the urine contained no tubercle bacilli in the early stage of the closed parenchymatous type of renal tuberculosis; it did later when the involved ureter was occluded. Tuberculosis of the kidney frequently occurred without symptoms in the presence of pulmonary tuberculosis. The author quoted statistics. He said tubercle bacilli were sometimes found in the urine in the absence of renal involvement. In the case reports it was pointed out that tuberculosis of the male genital organs was sometimes responsible for tubercle bacilli in the bladder urine. Renal and genital tuberculosis were frequently associated in the male but not in the female. In the absence of tubercle bacilli in the urine the diagnosis was at times difficult in those cases presenting symptoms also characteristic of nonrenal infection. The author said that the diagnosis was confirmed at operation in ninety per cent. of his cases with a positive guinea pig test. Tubercle bacilli were found in the smears in eighty-three per cent. of the specimens of urine from kidneys which he found to be tuberculous at operation. Lowenstein's study of various strains of tubercle bacilli showed some to be pathogenic for man but not for guinea pigs, and vice versa. Other means of diagnosis were palpation of the ureter through the vagina in women and the rectum in men. Catheterization through the Kelly cystoscope succeeded at times when other methods failed. Ureters were located following injection of indigo carmine if there was no marked decrease in renal

function. The author spoke of the liability of error following exploratory incision of kidney for diagnosis. He said the examination of urine obtained through incision of kidney pelvis or ureter was of greater value. Subcutaneous injection of tuberculin was suggestive in the presence of a focal reaction. This procedure was occasionally of value when the ureter was occluded, also when there was a question of bilateral infection. Cases were reported and the author stated that functional kidney tests were of little diagnostic value in the early stages of renal tuberculosis. There were bladder changes in tuberculosis of the kidney. Tuberculous calcification was frequent and a valuable diagnostic sign, especially when the ureter was closed and in bilateral infection. The classification of tuberculous shadows was taken up and illustrated by lantern slides and case reports. The differential diagnosis between tuberculous calcification and stones in the kidney was noted. The author said he had obtained the data by pyelography. He discussed the matter of putty kidney. It was also stated that tuberculosis of the kidney in children, according to statistics, was uncommon under ten years of age but actually more frequent than generally appreciated, and was often associated with pulmonary tuberculosis. The same diagnostic measures as those used in adults were indicated in children and infants, and he reported on the case of a child with tuberculous calcification in both kidneys, left ureter and bladder. The author further stated that tuberculosis of the kidney during pregnancy was uncommon but probably often overlooked. Lantern slides were used to demonstrate the principal points.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

CHAIRMAN, DR. DALLAS B. PHEMISTER, OF CHICAGO.
SECRETARY, DR. J. TATE MASON, OF SEATTLE.

Recognition of the Patient Unsuited to Thyroidectomy in Exophthalmic Goitre.—Dr. William Bartlett, of St. Louis, Mo., emphasized the following symptoms in the diagnosis of exophthalmic goitre: Characteristic eye signs; thrills and bruits; vasomotor symptoms, such as vomiting, diarrhea, and sweating; nervous irritability; mental aberrations (of primary nature); crises and remissions. The patients generally unsuited to operation showed definite heart damage; increased blood nitrogen; high metabolic rate (40 plus); great loss of weight; absence of self-control; lowered blood pressure. The following circulatory conditions also rendered the patient unsuitable for operation: Temporarily, a heart temporarily exhausted; weak first sound; diastolic shading; ten day rest, no digitalis. Indefinitely, congestive heart failure; fibrillation, extreme shading; digitalis S. T. forty-eight c. c. in eight days; complete repair possible. Permanently, burned out. The types of patients unsuited to operation were: the fulminating type; adolescent patients; those with psychoses, epileptics; those sensitive to oxygen deficiency (often discovered at operation).

Direct measures used in preparing the patient for thyroidectomy were: Correction of thyroid secretion by means of Lugol's solution; decrease thyroid activity; restore nutritional balance; favor circulatory restitution; aid neuropsychic improvement. Indirect general measures included thyroidectomy; direct local measures included ligations, injections and radiation; indirect local measures related to the teeth, tonsils and sinuses.

Preparation was impossible in the following cases: Death from thyrotoxicosis; case dismissed as hopeless; patient intolerant of restraint; the presence of intercurrent diseases, such as pneumonia, scarlet fever, measles, postnasal infection or parotid abscess.

The patient was ready for operation when the heart condition was satisfactory (transient fibrillation); blood nitrogen under 50; metabolic rate under 40 plus; weight regained fifty per cent. of loss; selfcontrol reestablished; blood pressure 140/65-55 (all figures approximate).

Thyroidectomy was never an emergency procedure; it was better to await a maximum improvement.

SECTION ON DISEASES OF CHILDREN

CHAIRMAN, DR. CLIFFORD G. GRULEE, OF CHICAGO.
SECRETARY, DR. HUGH MC CULLOCH, OF ST. LOUIS.

Breast Feeding Problem.—Dr. C. Ulysses Moore, of Portland, Ore., presented a paper on problems in breast feeding. He touched upon the following points:

1. Reasons for breast feeding. 2. Problems: a. insufficient milk, 1, types of breast, and 2, improper stimulation; b. nipples, 1, hypertonic, 2, inverted; c. breasts, 1, caked, 2, mastitis, and 3, cancer complex; d. constitutional disease, 1, contagious, 2, heart, 3, kidney, 4, tuberculosis, 5, insanity; e. mental hazards; f. hygiene; g. nutrition. 3. Treatment and results in typical cases: a. manual stimulation in various types of improperly functioning breasts; b. use of nipple areators in pathological conditions of nipple.

In summing up, Dr. Moore said he might add that any mother who can care for her baby can nurse it, and that mothers who would nurse their young are often prevented by the mental hazards received directly or indirectly from the manufacturers of baby foods.

Letters to the Editor.

THE EFFECT OF OPERATION PER SE

NEW YORK, *May 27, 1926.*

To the Editor:

The writer has made futile efforts to get on the track of a paper written about 1895 to 1900 by Dr. John A. Wyeth, of New York, the former president of the New York Academy of Medicine, on "The Effect of Operation per se." In it the author referred—as far as I remember—among other matters to the spontaneous regression of carcinoma of the stomach, etc., after laparotomy. The exact title of the paper has slipped my memory, but I recall that it ended with the words "per se."

Dr. Wyeth is dead, and so are many of his former personal assistants. The medical libraries have been appealed to in vain. Yet, I am sure I saw the article in print.

It occurred to me to write you about it, in the hope that through your courteous intervention perhaps some hidden source might be uncovered, from which the lost paper would come to light.

WILLY MEYER.
700 MADISON AVENUE.

Abstracts from Current Literature

CARDIOLOGY

Efficiency of the Heart and Its Measurement.—Yandell Henderson (*Lancet,* December 19, 1925) states that the only adequate expression of the efficiency of the heart is one based on accurate measurements of the volume of blood that the heart pumps and upon the amount of oxygen consumed by the body. The relation between these two functions determines the arteriovenous oxygen difference, and thus determines the amount, and particularly the pressure of the oxygen supply to the working tissues of the body. In vigorous mammals of all sizes the arteriovenous oxygen difference during bodily rest is about three or four volumes per cent.

The volume of the circulation in vigorous men and animals at rest is about three to four litres of blood per minute per square metre of skin surface. The stroke volume for animals and men of corresponding activity is a function of their body weights not of their surfaces. For all vigorous mammals, including man, the stroke index during rest is about 1.4 to 1.8 c.c. per kilo per beat. The pulse rate is in general proportional to the surface weight ratio and is thus in general an index of the intensity of respiratory metabolism.

The mechanical conditions of the heart's activity and its own behavior make the right ventricle the meter of the circulation. The size of the stroke of this meter depends on the volume and pressure of the venous return. The venous pressure mechanism is adjusted to act in relation to the intensity of the gaseous exchange of the tissues.

Treatment of the Unusual Manifestations of Heart Disease.—The following lines of treatment are recommended by George R. Herrmann, (*Medical Clinics of North America,* January, 1926):

In coronary spasm or thrombosis immediate complete and continued rest in bed under morphine is indicated. Vasodilators are in order as soon as coronary spasm or thrombosis is suspected. Amyl nitrite, three to five minims, usually in pearls, should be administered by inhalations; nitroglycerin spirits, one to two minims, or one tablet, 0.0005 gm., given under the tongue, and erythrol tetranitrate tablet, 0.05 gm., every two or three hours.

Euphyllin (theophyllin ethylenediamin) is a most promising drug because it distinctly increases the coronary flow. It is given in 0.48 gm. doses two to four times a day. In urgent cases it is given well diluted intravenously, from specially prepared ampoules, or intramuscularly in a more concentrated solution, or per os in tabloid form, or per rectum in suppositories.

Benzyl succinate, 0.4 gm., two or three times a day, will often relieve and ward off minor coronary angiospasms and can be used over long periods of time.

Iodides and mercury have long been in use in cases where syphilis is the etiological factor, and often also where involutionary arteriosclerosis is the only recognizable basis of the symptoms. Where conduction defects are shown by the electrocardiogram, it is safer to use sodium rather than potassium salts. Since arsphenamine is also poorly tolerated in cardiovascular lues, the use of bismuth salicylate, 0.3 gm., injected intramuscularly every five days, seems to be the most rational treatment.

In heart block with Adams-Stokes attacks and with acute liver engorgement barium chloride in 0.03 to 0.05 gm. doses every three hours has proved most satisfactory in bringing a patient out of a stormy series of attacks and putting him back on his feet.

When increased vagus tone is responsible for the block, atropine sulphate 0.0006 gm., given every three hours or less frequently will keep the vagus pretty well paralyzed. Sometimes, however, the increase in auricular rate following atropine increases the degree of block. Electrocardiograms enable one to treat these patients most intelligently.

In paroxysmal auricular fibrillation, where the acute rhythm disturbance is threatening the life of a patient and where acute abdominal symptoms are presenting, it is not unduly heroic therapeutics to use quinidin sulphate. The drug can be given well diluted in doses of 0.13 to 0.19 gm. intravenously without much, if any, more danger and with much more definite results than when given by mouth in doses of twice the size at six hour intervals. The test for idiosyncrasy with a small dose, 0.065 to 0.13 gm. by mouth, should be carried out, or one tenth this amount by vein should be tried whenever the case is not too urgent.

In the more chronic types of heart failure prompt and complete digitalization is indicated whether auricular fibrillation or normal mechanism is present. In cases with delayed conduction atropinization will, as a rule, allow digitalization without blocking. Venesection, with the withdrawal of 500 c.c. of blood, will often relieve a greatly embarrassed heart and a congested vascular system and initiate a period of progressive improvement. Valvular lesions and congenital lesions, as mitral stenosis and defective interventricular septum, with great pulmonary congestion, are greatly relieved by bleeding. Not infrequently spontaneous hemorrhages serve to tide the patient along.

Aneurysms usually do not respond very favorably to antiluetic treatment, especially when they have reached the point of producing pressure symptoms. At times the rapidity of the progress of the lesion may be checked. Surgical wiring and electrocoagulation occasionally yield favorable results. Intrathoracic arterial and cardiac surgery is, however, still in its infancy.

Infections, pericarditis, and endocarditis do not respond uniformly to treatment. Salicylates in large doses, two grains to the pound of body weight per day, is about as effective as any remedy. In some cases organic dyestuffs injected intravenously have proved effective. Favorable results have been reported with sodium cacodylate injections. No specific medication has been discovered as yet. The complications of the infections must be treated more or less symptomatically. The severe anemia and uremia do not respond to the ordinary therapeutic procedures and the prognosis is, as a rule, hopeless.

Quinidin—A Useful Cardiac Remedy.—Robert L. Levy (*Medical Clinics of North America,* November, 1925) classifies his cases into those suitable and those unsuitable for quinidin therapy. Not every patient with persistent auricular fibrillation should receive quinidin, for two reasons. First, not every case will revert to normal mechanism, nor, if restoration is made, will this mechanism necessarily be maintained; second, by selection of cases, the danger of accident, chiefly embolism and sudden collapse, may be minimized. The chief criterion of the likelihood of a successful issue is the existence of a competent myocardium.

The suitable cases include: 1, fibrillation of recent onset; 2, little cardiac enlargement; 3, no valvular disease; 4, fibrillation associated with hyperthyroidism, provided there is only moderate myocardial damage.

The unsuitable cases are: 1, badly damaged hearts, especially those with marked hypertrophy and longstanding valvular disease; 2, hearts which after rest and proper digitalis therapy, evince but little evidence of restoration of reserve; 3, history of embolism; 4, acute or subacute bacterial endocarditis; 5, patients with an idiosyncrasy for cinchona derivatives; 6, occasionally, patients giving a history of cardiac pain which has ceased after the onset of fibrillation. It is emphasized that the number of patients suitable for the restoration experiment is distinctly limited. When in doubt, it is usually wiser to counsel against the use of quinidin and to employ the more conservative method of digitalis medication.

Proper preparation of the patient before beginning quinidin treatment is important. The patient should be in bed, under the supervision of a nurse, preferably in a hospital where electrocardiograms may be made if necessary. Heart failure, if present, must first be managed by rest, diet, regulation of fluid intake and the exhibition of digitalis. The ventricular rate should be maintained between sixty and seventy beats a minute, with the patient in bed. It is desirable to attain a maximal degree of circulatory efficiency. The individual doses of quinidin sulphate, in capsule form, are given at intervals of two hours as follows: First day, two doses of 0.2 gm. These are given to test for the presence of idiosyncrasy to cinchona. If this is found to exist, treatment must be abandoned. Second day, three doses of 0.4 gm. Third day, four doses of 0.4 gm. Fourth and succeeding days, five doses of 0.4 gm. The treatment may be continued for a week. It is safer not to give more than 2 gm. in twenty-four hours. The onset of frequent extra-

systoles or of persistently high ventricular rate affords an indication for cessation of therapy. If one course is unsuccessful, a second may achieve the desired result. Usually, however, a successful issue is attained in four to six days. If it is necessary to prolong treatment beyond this period, normal rhythm, even though restored, is often not maintained. The onset of persistent auricular flutter following quinidin is not of favorable import. Further doses rarely convert the flutter to normal rhythm under these circumstances. It is best to stop the quinidin and administer digitalis, following which a reversion to fibrillation almost invariably ensues. After the restoration of normal rhythm, it is probably desirable to continue with the use of small, daily doses of quinidin for several weeks. The administration of 0.2 gm. morning and evening usually suffices. This amount may be taken over long periods without danger.

The majority of patients with auricular fibrillation are aware of the irregularity because of palpitation. In order to maintain a relatively slow ventricular rate, constant digitalis medication is necessary. The response of the heart to effort is limited because tachycardia is readily induced. The author believes that the abolition of fibrillation is distinctly worth while, provided the limitations of treatment are observed and cases are carefully selected. The permanency of normal rhythm after quinidin is variable. Selected cases have not yet been followed long enough to venture a final estimate. Certainly the result often justifies the procedure. The patient is better because his symptoms are relieved; he is freed from the necessity of continuous digitalis medication; the response of the heart to effort is more effective; and he knows that his heart is beating regularly.

Quinidin has also been employed as a prophylactic in the attempt to prevent or reduce the incidence of attacks of paroxysmal tachycardia, both of auricular and ventricular origin. The results have been variable, depending in a measure on the associated cardiac condition. Similarly, premature beats, when annoying to the patient, may sometimes be abolished by small doses of quinidin. Quinin will often accompuish the same result. Experience with quinidin therapy of these forms of irregularity is still meager.

Prognosis and Treatment of Hypertensive Cardiovascular Renal Disease.—Elsworth S. Smith (*Medical Clinics of North America,* July, 1925) applies the term hypertensive cardiovascular renal disease to organic lesions of the heart, arteries, and kidneys resulting either primarily from essential arterial hypertension, or from an antecedent nephritis.

The prognosis in this class of cases is absolutely dependent on at how early a date the disease can be recognized and an intelligent prophylaxis instituted for the protection and salvation of the cardiovascular renal system. Hence the urgent need of routine blood pressure observations, especially at or about middle life. This question involves a consideration of all the known causes of arterial hypertension and their possible elimination, control, or amelioration, and then at the outset, from the viewpoint of prognosis, prophylaxis, and treatment should the subject of the affection under consideration be divided into two main causes.

First, into the renal and nonrenal groups, the former comprising the cases in which the disease has developed secondary to a primary nephritis, while in the latter group, sclerotic nephritis, when present, has developed secondarily to the arteriosclerotic process, the primary cause having been the accumulation of pressure substances in the blood. The latter is, by far, the larger group and constitutes the socalled hypertension or hyperpiesis of Allbutt.

Second, those still retaining, and those having lost their vasomotor response. For, in the first class, the serious and oftentimes fatal results may be altogether prevented or greatly retarded, while in the second group life expectancy is short at best, and the main reliance must be on the maintaining of the integrity of the propelling force of the heart.

In the renal type, showing a history of preexisting renal disease and evidence of marked renal insufficiency (low phthalein test and high nonprotein blood nitrogen), the prognosis depends, first, on the character and grade of the nephritis and the secondary effects of the hypertension on the heart and the arteries. The treatment also must include that of the existing nephritis through a low protein diet, largely of the Karrell type, a salt free diet when edema is present, and elimination by the emunctories and attention to complications.

In socalled essential hypertension, the several causes of hypertension require consideration, such as the possible causes of mental and physical wear and tear; foci of infection in the tonsils, nasal sinuses, the teeth, the appendix, gallbladder and the genitourinary organs; intoxications from alcohol, tobacco, coffee, tea, and industrial intoxications; Autointoxications; metabolic and endocrine influences; diabetes mellitus.

In such complications as cerebral hemorrhage and angina pectoris, the vasodilator remedies find their main indication. These are amyl nitrite, nitroglycerine, sodium nitrite, erythrol tetranitrate, and benzyl benzoate. The effects of the first two are very evanescent and doses must be repeated at short intervals. In uremic convulsions or coma, free venesection of at least sixteen ounces is indicated, replacing this amount with an equal amount of normal saline solution, or with ten per cent glucose solution if acidosis is present, together with insulin if indicated.

In the terminal stages, resembling the clinical picture of chronic cardiac decompensation from valvular disease, and if the symptoms are not too urgent or critical, an absolute rest on a strict Karrell diet is indicated. In more urgent cases a massive dose of digitalis will cause diuresis and marked improvement. The socalled theobromin group of diuretics are also valuable, especially agurin. The Nauheim or Schott baths and resistant movements also act well in selected cases, but should be carefully administered.

Digitalis Hypersusceptibility and Digitalis Dose.—Walter A. Bastedo (*Medical Clinics of North America,* November, 1925) summarizes the proper methods of dose and administration as follows:

1. Digitalis effects may be obtained very quickly by mouth administration.

2. When full digitalis effects are desired, as in auricular fibrillation cases, the patient should be in bed and watched.

3. The drug should be stopped at the first toxic indication, for overdoses are harmful and their effects may not be readily recovered from.

4. Digitalis hypersusceptibility is encountered in a sufficient number of cases to make it of moment. For the nonurgent auricular fibrillation or flutter cases either, 1, a modification of Eggleston's method is recommended as follows: Having calculated the total average required dose on the basis of 0.15 c.c. of the tincture per pound of body weight, give one quarter of this calculated amount at once. and thereafter one eighth every six hours till the desired effect is obtained or some evidence of digitalization becomes manifest; or, 2, since busy doctors resent the need of exact figuring, give one dram of the tincture at once, and then 0.5 dram every six hours till digitalization is evident. For digitalis powder use one tenth of these amounts in gram or grain. For the infusion use seven times as much in cubic centimeters or minims. The same doses are applicable in fever cases, such as pneumonia. In normal rhythm cases much smaller doses usually suffice.

5. Till digitalization is obtained watch with the utmost care for the first signs of overdoses. In hypersusceptible cases these will appear early. In the resistant cases the doses may be increased as soon as it is evident that effects are not being obtained.

6. Use digitalis with great caution in patients who have been taking the drug within three weeks.

7. Do not attempt to digitalize an ambulatory (office) patient. For such, however, small doses may be valuable, either of themselves or to continue a state of digitalization previously brought about.

8. To obtain effects in normal rhythm cases it is rarely necessary to digitalize fully.

9. Intramuscular administration is called for only if the stomach is intolerant from other than digitalis causes. However, it is to be borne in mind that a sensitive stomach may very early become intolerant to digitalis, i.e., before the patient is digitalized, and that a patient with such a stomach can be digitalized by the hypodermic method. Or administration by mouth may be prevented by the persistent vomiting associated with decompensation so that hypodermic doses are indicated.

10. Intravenous adminstration of digitalis is especially dangerous and is unecessary. If the intravenous route is selected strophanthin should be preferred.

11. After digitalization is accomplished the effect may usually be maintained by twenty or thirty minims a day, but sometimes by as little as two, three, or five minims a day.

Safety lies in stopping digitalis altogether or in materially reducing its dose when

1. Digitalization is shown by the electrocardiograph.
2. The desired effect is accomplished, as by the disappearance of dropsy or enlargement of the liver, or by the slowing and steadying of the pulse in auricular fibrillation.
3. Nausea is marked or vomiting ensues. An exception is mentioned in the previous section, paragraph 9.
4. The patient complains of headache, anorexia and dizziness, or lightheadedness.
5. The cardiac rate goes below 60. The heart may become progressively slower for several days after the drug is stopped, hence the wisdom of ceasing the administration before the slowing has become extreme.
6. The rate slows suddenly.
7. Coupled rhythm appears.
8. Premature beats occur.
9. A regular rhythm becomes irregular or intermittent.
10. Sinus arrhythmia appears in normal rhythm cases or phasic arrhythmia in auricular fibrillation cases.

Clinical Aspects of Ischemic Necrosis of the Heart Muscle.—Alexander George Gibson (*Lancet,* December 19, 1925) remarks that the first requisite in the detection of ischemic necrosis of the heart muscle is a clear knowledge of the anatomical process, and to have it in mind in approaching a cardiac case in any person over forty years of age. We ought, he thinks to be secretely ashamed if we are reduced to diagnose mitral regurgitation or cardiac dilatation or even auricular fibrillation without a hint of etiology. We are most likely to be right in a diagnosis of ischemic necrosis in angina if we take care to exclude certain obvious possibilities such as aneurysm. Chronic cardiac failure in old people in the absence of syphilis, old rheumatic affections of the heart, and pernicious anemia, is almost certainly due to ischemic necrosis. Chronic cardiac failure plus evidence of aseptic embolism makes the diagnosis of ischemic necrosis practically certain.

The pulse gives help occasionally. Mackenzie has noticed in two of his cases pulsus alternans one of the author's cases had fibrillation, another, at the time of the initial lesion, irregularity in rhythm and volume probably due to fibrillation. The pulse has been recorded both fast and slow. The pulse, therefore, may give some import of cardiac failure, but can give nothing else.

The first sound of the heart is frequently poor in quality or even absent. The electrocardiogram has been explored as a means of getting greater accuracy.

The Cardiac Reserve.—T. L. Deaver (*American Journal of Surgery,* September, 1925) states that: The cardiac reserve is an accessory power, present to a certain degree in every individual, but greater in some than in others, and is capable of being dissipated or conserved.

Being a latent power, so to speak, it is called upon only in emergency, and is the all important element in recovery from any surgical operation.

It is a power dependent, to some extent, upon extracardiac influence, especially that of the central and sympathetic nervous systems and the glands of internal secretion, but resides largely within the mechanism of the heart. Though tenacious in quality, it is profoundly affected by shock from any cause. It may be suddenly terminated by grave injury to the head, chest or abdomen, or gradually subdued by hemorrhage, by disease or the changes incident to old age.

The amount of cardiac reserve should be determined, as nearly as possible, in every patient who is to be subjected to major surgery. A complete physical examination, a well taken history, the usual analyses, the electrocardiograph, blood pressure, the metabolic rate and roentgenography, with special study of the pulse, both at rest and after exertion, are the more substantial means at our command. Great importance is attached to the correct interpretation of these findings. Even then, we cannot always estimate the strength of the heart muscle, and therefore of the cardiac reserve, since the limitations of physical life are more or less fixed by conditions over which we have no control.

Suspension of the cardiac reserve is not always fatal, for many persons have been restored to life by means of the pulmotor, massage of the heart and by injections of adrenalin chloride directly into the heart muscle, even when death seemed inevitable. When the cardiac reserve is exhausted, however, nothing known to science can again set in motion the machinery called life.

Sudden Death Due to Exacerbation of Latent Syphilitic Myocarditis.—Aldred Scott Warthin (*American Journal of Syphilis,* January, 1926) reports eight cases to show that sudden death may occur in latent syphilis as the result of an acute exacerbation of previously mild, latent processes in the heart and aorta. The pathological character of the active lesions differs from that of the chronic lesions in the more marked edema and the greater polymorphonuclear cell content of the infiltrations. Very acute and active syphilis is characterized by more diffuse lesions, more marked edema and a greater number of polymorphonuclear cells in the infiltration. The typical picture of perivascular lymphocyte and plasma cell infiltration and eventually fibrosis will, however, always be associated with these when the active process is an exacerbation of an older latent syphilis. The polymorphonuclear infiltration of the critical reaction is believed by some to be just as typical for syphilis as is the focal round cell infiltration for the chronic type of syphilitic process. This fact may not be recognized by the pathologist who carries in his mind the mononuclear type of infiltration as the characteristic diagnostic picture of syphilis, and he may, therefore, fail to recognize the polymorphonuclear malignant type of syphilis. At any rate, the demonstration of the spirochete in the latter type of lesion is the only decisive diagnostic point, and must be accomplished to fix the diagnosis, and unless this is done such cases will escape proper interpretation. Unfortunately for the recognition of these cases, in how many pathological laboratories are routine examinations for spirochetes made?

The factors leading to such an increase of virulency in chronic latent cases are still unknown, beyond the vague conception of lower resistance due to overstrain, fatigue, other infections and intoxications, endocrine changes, other environmental influences, etc.

Much is being said at the present time as to the great frequency and apparent increase of cardiac disease, but the important if not predominant rôle played by syphilis in the production of myocardial incompetency is not recognized by the major part of the profession.

Socalled cardiac failure as a result of syphilis may be brought about in several ways:

1. Myocardial atrophy and fibrosis due to slowly progressive mild syphilitic lesions in the myocardium. This is the most common form.
2. Syphilitic disease of the coronaries with resulting infarction and fibrosis.
3. Combination of these two processes.
4. Syphilis of the aortive valve. Always associated with some degree of myocardial syphilis.
5. Combination of myocardial syphilis and syphilitic mesaortitis.
6. Acute exacerbations of a previously latent syphilis (critical stage of syphilitic infection) or an acute malignant type of cardiac syphilis. This is much less common than the chronic latent form, but its frequency remains to be determined, as it has not received pathological recognition.

New Clinical Points of View in Cardiac Asthma.—As the result of his very intensive clinical study of cardiac asthma, Sigmund Wassermann (*Wiener Archiv für innere Medizin,* January 5, 1926) draws the following conclusions:

Asthmatic attacks occur in insufficiency of the left as well as of the right heart. The former represent the typical cardiac asthma, the classical form of heart asthma, the latter more the asthmatoform attacks. Typical cardiac asthma is the acute variety of the dyspnea of the greater circulation or spontaneous dyspnea.

Pathogenetically, it depends on a functional insufficiency of the left ventricle and its normal effect on, a, the arterial circulation (somatic) and b, the central nervous system in the sense of a dyspneic anoxemic stimulation. Liability of the left ventricle is a purely functional conception and has nothing to do with real insufficiency—actual failure and retrograde, i.e., pulmonary stasis.

Pathophysiologically, cardiac asthma is the reaction of the central nervous system, especially the medulla oblongata, upon the (cardio) arterial sector of the dyspneic stimuli originating in the greater circulation, and has the significance of a sudden protective reaction and mechanism against a choking that originates and appears centrally. Dyspneic irritations resulting from pulmonary stasis have

thing to do with this reaction primarily. All of the cen- ally produced reactions represent the cardioasthmatic syn- rome and consist of a double series of (subjective and ob- ctive) signs of disease.

The subjective symptoms are the adequate psychic cor- elative of the arterial anoxemic choking and includes the roup of centrally precipitated symptoms of air or oxygen unger: a, the motor and psychomotor unrest, such as de- ire for movement, flight impulses, etc.; b, anxiety (res- iratory); c, oppression (respiratory angina); d, sensation f choking (suffocation); e, sensation of strangulation.

The objective symptomatology includes all the symptoms roduced by the dyspneic stimulation of the various bulbo- pinal centres; in the peripheral respiratory apparatus, the ardioasthmatic dyspnea; maximal, occasionally stormy espiratory activity with the use of the auxiliary respiratory nuscles. The breathing is mostly deep, and the frequency increased; in the vegetative nervous system with the omatic visceral signs in the lungs (bronchial constrictors, difficult expiration), in the heart (bradycardia, palpitation of the heart); in the pharyngeal gastrointestinal tract spasms of the pharyngoesophageal musculature—sensation of strangulation—nausea and other gastric symptoms, tenes- nus, etc.; in the bladder, strangury and frequent mic- turition; in the vasomotor centre: increased blood pres- sure, occasionally rapid and high.

Clinically, there is the aortic heart (large and small) and especially the insufficiency of the aortic valve and the in- farct of the left ventricle. The course of the disease may vary: 1, spontaneous recession; 2, exhaustion of the res- piratory centre, with Cheyne-Stokes or terminal asphyxia (paralysis); 3, cardiac insufficiency, with pulmonary con- gestion or edema.

The treatment includes the specially effective morphine or opiates, oxygen, and the vascular remedies, such as nitro- glycerin, etc.

In asthma of the lesser circulation, or congestive asthma, there are attacks of dyspnea with marked insufficiency of the circulation, namely, in the pulmonary and venous sector, with cyanosis, dyspnea (orthopnea) hydrops, etc. The symptoms include intense cyanosis, exaggeration of the ob- jective dyspnea, slight or no rise of blood pressure, and at- tacks of dyspnea in series. Clinically, we see the mitral heart or insufficiency of the right heart. The treatment in- cludes venesection, cardiac remedies (digitalis group, caf- feine), morphine in trial and in very small doses, and oxy- gen. The prognosis is extremely bad.

Portal Hypotension.—H. Surmont (*Bulletin de l'Académie de médecine,* January 12, 1926) calls attention to the clinical importance of the syndrome of portal hypotension, meaning by the latter a reduction in the quantity and pressure of blood in the portal vein. Acute portal hypotension is produced clinically by conditions that suddenly dry up the portal tributaries, such as obstinate vomiting and acute diarrhea. Chronic portal hypertension, much oftener over- looked because of its being latent, can nevertheless be daily detected by the observant physician and plays as important a part in stenoses of the upper portions of the alimentary canal as does portal hypertension in venous cirrhoses of the liver. The symptoms arising mechanically from portal hypotension are both abdominal and remote. Distally to the liver, the results are the same as in portal hypertension, viz., a small heart and pulse, low blood pressure, increased heart rate, reduced urinary output, sometimes albuminuria, dryness of the skin and mucous membranes, and loss of weight because of general dehydration. The loss of flesh from portal hypo- tension is pronounced and general, in contrast to that from portal hypertension, in which the emaciation of the body below the diaphragm is masked by edema of the lower limbs and ascites. In the liver itself, portal hypotension is marked by reduced size of the organ, which is made up, however, with abnormal rapidity through "avidity of the colon" upon proctoclysis. Proximally to the liver arise the most typical of the symptoms of portal hypotension, viz., emaciation, markedly scaphoid abdomen, diminished abdominal tone, pale and withered abdominal skin, gastric abnormity varying with the cause of the portal hypotension, a "wet rag" small in- testine, cordlike colon, and the anus free of hemorrhoids or with shrunken hemorrhoids. The diagnosis of portal hypo- tension is clinched by certain manifestations or tests demon- strating avidity of, i. e., unusually rapid absorption by the bowel. Avidity of the small intestine is shown by the ab- normal output of urine early in the night brought on by the recumbent position in patients with pyloric stenosis. The condition may be shown artificially by an induced urinary elimination test, carried out on different days, with the subject standing and reclining; care is taken to have the stomach empty before the tests. Avidity of the colon is demonstrated by an unusually rapid absorption of isotonic glucose solution, given at body temperature, from the bowel; this unusual rate is discerned not only through the increase of the body weight and diuresis, but also through a drop in the erythrocyte count and blood viscosity. The clinical significance of the study of portal hypotension lies in that it enables the obstetrician to combat early the conditions of dehydration and hepatic insufficiency which are at the bottom of the pernicious vomiting of pregnancy; use of the urine graduate and administration of glucose solution rectally in the daily amounts indicated will vastly improve the prognosis of these cases. The surgeon, on the other hand, should avail himself of "colonic avidity" in cases with stenoses of the upper portions of the alimentary canal to carry out a fundamental treatment of low blood pressure, restoring body heat, counteracting shock, reestablishing function of the underfed glands, and, in particular, reawakening with a direct supply of glucose the activity of the liver cells, with their glycogenic and antitoxic functions.

Congenital Cardiac Hypertrophy.—As congenital car- diac hypertrophy is sufficiently rare, A. J. Scott and A. H. Zeiler (*American Journal of Diseases of Children,* January, 1926) wish to record another case. The patient, a girl of five weeks, was referred because of gastrointestinal dis- turbance, dyspnea and cyanosis. At necropsy the heart was found to weigh 55.4 gm. (similar to that of an infant aged eighteen months) and was 6.5 cm. wide. There was marked hypertrophy of the ventricular musculature. The ductus Botalli and foramen ovale were closed, and all the valves were competent. The left auricle was normal in size, but the right was dilated. There was a slight increase in the pericardial fluid. The lungs had some hypostasis, and the thymus was normal in size for the age. The abdominal organs were normal except for the enlarged liver and passive congestion in the kidneys.

Coarctation of the Aorta.—An interesting point about a case of coarctation of the aorta of the congenital type re- ported by James W. Bruce and Robert Ball (*American Journal of Diseases of Children,* February, 1926) is the similarity of its clinical manifestations to those of intra- cranial injury caused by birth trauma. It seemed logical to the author to believe that marked narrowing of the lumen of the aorta distal to the great vessels supplying the head would cause increase of intracranial pressure. The diam- eter of the ascending arch of the aorta was seven mm. and it had diminished to four mm. just distal to the point of origin of the left subclavian artery, later widening to its original diameter before joining with the ductus arteriosus. The infant whose case is described lived forty hours. Its convulsions occurring at intervals of thirty minutes to two hours were limited to the face and upper extremities.

Operative Treatment of Angina Pectoris.—H. H. Kerr (*Annals of Surgery,* September, 1925) finds that the Ameri- can operation of resection of the superior cervical sympa- thetic ganglion under infiltration anesthesia affords a higher percentage of relief than the more difficult and dangerous operations in use. The only difficulty in this operation is the differentiation between the vagus with its bulb and the elon- gated sympathetic ganglia. This may be overcome by the knowledge that when the vagus nerve is grasped with smooth thumb forceps and gently squeezed the systolic blood pressure drops and, with the release of the nerve, the blood pressure resumes its former level. The pulse rate is not altered by this manipulation. Squeezing, or even tearing out the superior cervical ganglion, has no marked effect on the blood pressure. This phenomenon suggests that the de- pressor nerve is included in the vagus sheath at this level.

The author reports on eight patients, operated upon by him, remarking that none has since died of the disease as far as can yet be ascertained.

Development and Size of the Heart in Children.—Thomas Ziskin (*American Journal of Diseases of Children,* December, 1925) presents charts on the development and size of the heart in children as revealed by teleoröntgen ray measurements.

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Medicolegal Notes.

WHETHER A MEDICAL COLLEGE IS A CHARITABLE INSTITUTION HELD A QUESTION OF FACT

A college of physicians and surgeons was organized under Massachusetts St. 1874, c. 375, as amended by St. 1875, c. 49, sec. 1, "an act concerning associations for religious, charitable, educational and other purposes" and was empowered under St. 1883, c. 153, to confer the degree of doctor of medicine. In an action in tort against the hospital for damages for the death of a patient alleged to have been caused by negligent medical care and treatment of the patient by the defendant's servants and agents or by the negligent administration of medicines, the Massachusetts Supreme Judicial Court holds, Hall v. College of Physicians and Surgeons, 149 N. E. 675, that the charter of the college did not of itself make the college a public charity. The controlling purpose must be for the common and public benefit, and if it was created by the incorporators, or thereafter was administered and maintained by their successors for money making, this essential element was lacking, even if it might at times have expended money for purposes, or rendered gratuitous services which in common speech are called charitable. The defendant still would be acting within its charter powers if it charged every student in full for tuition, and clinical patients for medical care and treatment.

REVOCATION OF LICENSE FOR PUBLISHING FALSE AND UNAUTHORIZED ADVERTISEMENT AS TO CURE

The Supreme Court of Colorado, Doran v. State Board of Medical Examiners, 240 Pac., 335, affirmed the judgment of the district court dismissing a writ of certiorari to review an order of the State Board revoking plaintiff's license on the ground of immoral, unprofessional and dishonorable conduct in causing an advertisement containing the untrue and unauthorized statement that he had professionally treated and cured a patient of ulcers of the stomach to be published for the purpose of misleading readers of the advertisement. The complaint had been filed with the state board by the person whose name had been used. The court said, in part: "The state board of medical examiners has been created by our General Assembly as an administrative body, and invested with power to protect the public health and to control and regulate the practice of medicine in this state. Among its powers are the granting and revoking of licenses to practice medicine in this state. A license that has been granted may be revoked if the holder is guilty of immoral, unprofessional, or dishonorable conduct. No one may lawfully practice medicine in this state without a license from the board or continue to practice after his license has been revoked. . . .

"Upon this board of medical examiners was conferred the power to pass upon such charges. Its jurisdiction to do so is unquestioned. There does not appear to have been any abuse of discretion on its part. The courts are not called upon in such a case to pass upon the weight or sufficiency of the testimony upon which the findings of the board are based. There certainly was testimony to sustain its findings. This and other courts have repeatedly held that the object of certiorari is not to settle or determine disputed facts, but to investigate and correct errors of law of jurisdictional nature, and, under the Code of Procedure, abuse of discretion. In the case of State Board of Medical Examiners v. Brown, 70 Colo., 116, 198 Pac., 274, we said that section 337 of our Code of Civil Procedure 1908 defines "abuse of discretion" as a failure by a tribunal regularly to pursue its authority, and that does not include the commission of mere errors of law or mistakes in the finding of facts.

"Since the medical board had jurisdiction both as to the subject matter of its inquiry and of the person of the plaintiff in error, and having, as the record shows, regularly pursued its authority, the district court was right in dismissing the writ of certiorari, and its judgment is therefore affirmed, and supersedeas denied."

CALIFORNIA CHIROPRACTIC ACT DOES NOT REPEAL SECTION 17 OF MEDICAL PRACTICE ACT AS TO UNLICENSED PERSONS

A person practising as a chiropractor without the license required by section 15 of the California Chiropractic Act may, it is held, People v. Mills, 240 Pac., 296, be prosecuted in the Superior Court for violation of section 17 of the Medical Practice Act as amended in 1917, for practising without a license, since, by the provisions of section 18 of the Chiropractic Act, no part of the Medical Practice Act is repealed, save and except as to those portions which are in conflict with the Chiropractic Act, when applied to persons holding a license issued by the chiropractic board.

Under the two acts, the District Court of Appeals, Third District, California, says, a complete defense to a charge of curing without a license is the introduction and showing by the defendant that he holds a license from either board. Prior to the adoption of the initiative act relating to chiropractors in 1922, it was unlawful to practice that system of curing without having obtained a certificate from the state medical board of examiners. That situation, however, has now been corrected, so that, if a defendant is charged under section 17 of the Medical Practice Act, and if it be found that he is following the system used by chiropractors, then his complete defense is the showing that he holds a certificate from the chiropractic board. In other words, section 17 of the Medical Practice Act is allowed to remain in full force and effect by the initiative measure known as the Chiropractic Act, to apply with full force and effect as fully and completely as it did prior to 1922 by the terms of section 18 of the Chiropractic Act, to all unlicensed persons.

It was held that there was no merit in the contention that the defendant was subject to different degrees of punishment in different courts by reason of the difference in the terms of the two acts; nor in the contention that the defendant had been improperly convicted under an act which applied to him, to wit, one not holding any license, simply because he might also have been prosecuted in another court, or in the justice's court, for the same act and a lesser possible penalty imposed. The fact that the defendant had violated both acts did not relieve him from prosecution under the Medical Practice Act, its provisions not having been repealed by the Chiropractic Act.

SUFFICIENT DEMAND FOR AUTOPSY UNDER ACCIDENT POLICY

The Ohio Supreme Court holds, Gath v. Travelers' Ins. Co. of Hartford, Conn., 149 N. E. 389, that where a clause in an accident insurance policy gave the insurer the "right and opportunity to make an autopsy in case of death," the demand for an autopsy to be seasonable, must be made before burial when the death is known to an agent of the insurer a reasonable time before burial, and he has grounds for believing death was caused by other than accidental means.

Where a widow living at the home is named as the sole beneficiary of the insured, under the opportunity clause of the policy such demand must be made upon her. Verbal requests for opportunity to make an autopsy, made by an agent upon the son before burial, are not sufficient, where the son unequivocally notifies the agent that he will not, and does not, communicate such requests to the beneficiary.

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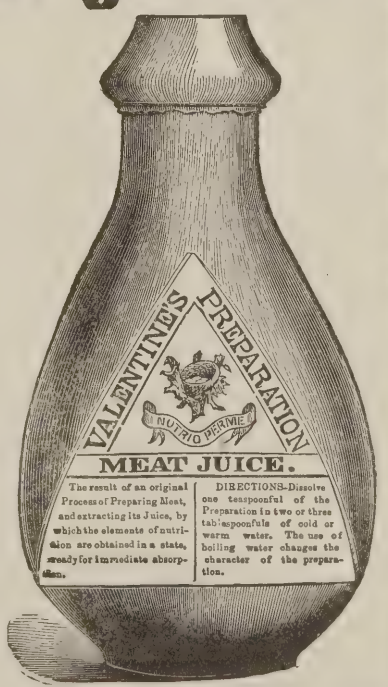
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Miscellany.

Inoculation and Vaccination.—Dr. Edgard Le Roy tells us (*Æsculape,* May, 1925) that Marius, bishop of Avenches, recounts that in 570 and 580 an epidemic of *petite vérole* (the word appeared for the first time here) ravaged Saul and Italy. Two children of the royal family died. In 580 the wife of the King of Burgundy, stricken with the disease, and finding herself at the point of death at the age of thirty-two, asked of her husband a last favor, the death of her physicians, Nicholas and Donatus, whom she accused of having hastened her end with their medicines. Nicholas and Donatus were slaughtered on the tomb of this amiable lady. Eleven centuries later the royal family of France were again dramatically decimated by the same disease. The Duke of Burgundy, his wife, and oldest son died of variola.

Cures were very rare, but it seems that it had already been known for some time that a way to make smallpox less fatal was to "graft" it on the arm of the healthy. It was the wife of the ambassador from England to Constantinople, Lady Montague, who in a letter of April 1, 1717, was the first to speak familiarly of this curious method of protection against this terrible scourge. A curious method in truth, scandalous, even, to our confreres of that time, all of whose beliefs were upset and thrown awry by it; for it meant simply the giving of smallpox in a prophylactic way to a healthy person by grafting on his skin "sprouts" from a person suffering from the disease. Persons thus inoculated were very well until the eighth day; then a fever appeared; they had on their faces about twenty postules which never left marks; they stayed in bed two days, rarely three; in eight days more they were cured of the light, mild form of smallpox which they had voluntarily given themselves, in order to escape those afflicted with acute smallpox to whom one is always exposed during an epidemic.

This method of protection was called inoculation or insertion. Lady Montague devoted herself to propagating it in her country and throughout Europe, first by having her own son aged six vaccinated, then by multiplying her letters and her efforts. At first ignorance, envy, distrust, malevolence, leagued themselves together against the new method. Finally in 1721 the College of Physicians of London proposed experimenting with "insertion" on six persons condemned to death, four men and two women. All recovered and thus saved their lives. In 1722 the Princess of Galles had her two daughters and later her son inoculated. France herself was rather averse to receiving inoculation, a little, without doubt, because of a national hesitation in following a foreign custom. A religious issue was made out of its introduction, and a long time passed before the attitude toward it was other than hostile. Finally, thanks to the strenuous efforts of the Encyclopedists, Voltaire, and above all La Condamine, toward the end of the eighteenth century the new method became acclimatized in France. The kings had their children inoculated, favored its introduction into the provinces, and, if people still died of smallpox, there were certainly fewer deaths than at the beginning of the century.

The next important step was the discovery by Jenner of England that cattle suffered from cow pox, and his decision to try inoculation with vaccine from cows instead of from human beings. But the honest Jenner did not try out his theory until after twenty years had passed. When the method was found to be successful, a Central Institute of Vaccination was opened in London, and Parliament bestowed upon Jenner a recompense of twenty thousand pounds.

In France it was the Duke of La Rochefoucauld-Liancourt who undertook to propagate Jenner's method. In cooperation with the director of the School of Medicine of Paris he organized a sort of propaganda committee for the extension of vaccination, and in 1801 the government established a special hospital for inoculation of vaccine. The method became so widespread and so popular that by 1820 poems were being written on the subject.

In Germany it enlisted in the same way the enthusiasm of princes, the people, and the scientists, and also in Denmark. In Russia the dowager empress gave the name of Vaccinof and a life annuity to the first Russian infant vaccinated. In Turkey, on the banks of the Tigris and Euphrates, at Bombay, Ceylon, in Mysore, Malabar, everywhere, it was received with delight. Everywhere rejoiced over, everywhere acclaimed at once, a spectacle unique in all the history of medicine. At the same time vaccination reached the United States via England, and Jefferson, President, was vaccinated, together with eighteen members of his household. But not one of her contemporaries equalled the efforts of Spain for the propagation of vaccination. A scientific expedition was sent out by Charles IV to the Canaries, Porto Rico, the Antilles, Venezuela, Mexico, Peru, Bolivia, Chile, etc., with men and materials to vaccinate the poor and establish institutes of vaccination.

Such was the triumphal voyage of vaccination around the world. This method is so familiar to us today that it is hard to realize and appreciate its inestimable value and the obscure efforts, incalculable in number, of modest and devoted physicians. Smallpox has practically disappeared from our countries. How many young doctors have never seen it! In 1870-71 there were reported to be two hundred thousand cases in our armies. During the four years and a half of the World War there were only twenty-six.

The Le Roy Crummer Collection of Old Medical Books in Omaha, Nebraska.—The catalogue of this collection would delight a collector of rare books. It bears the title *A List of Old Medical Books on the History of Medicine, and Medical Bibliography, and a List of Medical Portraits,* and each entry not only gives the necessary bibliographical information, but fully describes the editions. Among them are works of Sir Thomas Browne, Coranaro, Celsus, Galen, John Gerson, William Harvey, Edward Jenner, Paracelsus, and Vesalius. The majority of the books belong to the sixteenth and seventeenth centuries, representative not only of the great era of charlatanism, but also of experimentation and advance in medical science.

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September 29, 1925.

Dr. Werner.
My dear Friend:—

I can call you friend as "Amicus certus in re incerta cernitur."

When I left the hospital last May after the "Allen Starvation Treatment" I weighed only 106 lbs., very weak and debilitated with glycosuria and glycemia, very much discouraged and melancholy. Dr. Shoub wrote me that he had seen very good results from the "Rational Treatment of Diabetes," by Dr. Werner, President of the Solosan Company of Morristown, N. J. With much misgiving I began your treatment about July last.

I want to congratulate you on my condition. I now weigh 122 lbs., very good color in my face, no sugar in the urine, very little blood sugar, no diacetic acid, no acetone.

I feel much stronger and do not tire easily, as before. I sleep better and not so nervous. I feel better and clinically proven to be better.

A grateful patient,
REV. JOSEPH V. SWEENEY.

Literature on request

Solosan Company, Incorporated

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Ingrafting of Hundred Years Ago.—The satirical humor of Butler threw an air of disbelief over the operation of ingrafting noses as performed by Taliacotius, but the following details taken from the German journals of 1825 show the efforts made by scientists to extend the scope of the Taliacotian idea. A certain Dr. Dieffenbach took feathers of various sorts from chickens, pigeons and sparrows and "dibbled" them with a trochar into the skins of rabbits, puppies and kittens, where they took root and grew. He then ingrafted successfully upon his own arm the hairs of a friend's eyebrow. A claw detached from the toe of a pigeon was ingrafted upon its tail, "this being the most wonderful experiment of all, for, though the claw did not itself take root in the tail, it seems to have deposited there the egg of a claw, and a very fine new claw sprouted out from the same place. The feather which had been plucked out to make room for the claw grew again, and an obstinate contest arose between the feather and the claw for priority of place, in which the feather at last succeeded in expelling the intruder."—*Medical Press.*

History of Smallpox.—Prefacing his article on Smallpox in Canada, Dr. J. J. Heagerty writes (*World's Health,* August, 1925) that the word *pox* comes from an old Saxon word, *pocca,* meaning a pouch or bag. There is in India a tradition that smallpox existed among the Brahmins since the beginning of time, and that the inhabitants of India built temples and shrines and offered sacrifices to the goddess of smallpox to grant them protection from the disease. Modern writers tell us that the disease existed in China a thousand years before Christianity, and that it was believed by the Chinese, as in India, that a goddess presided over the disease, and, like the Brahmins, the Chinese built temples and propitiated the goddess by sacrifices. It is probable that smallpox existed among the ancient Greeks and Romans, although the evidence is not conclusive.

In the early Christian era, the first mention made of the disease is by Bishop Marius of Lausanne in the fifth century. Writing in 570 A. D. he describes a vast epidemic that swept over Italy and France, and a few years later Bishop Gregory of Tours speaks of the disease. He says that it is characterized by fever, pain in the back, and an eruption of pustules most marked on the face, hands and feet. In the seventh century, the disease found its way into the British Isles.

The first clear description of smallpox was by a physician who was known as Isaac the Jew. He lived in the ninth century. Rhazes, an Arabian physician, was the first to point out the fact that smallpox was a disease of children. In the British Museum are manuscripts from the tenth and eleventh centuries describing smallpox. In one of these, known as the Harleian manuscript, there is a Saxon prayer, "shield me from the hideous pocks." In the thirteenth century John of Gaddesden recognized the contagiousness of the disease. In 1758 Cardinal Wolsey was informed that Henry VII was leaving Wallingford on account of the prevalence of "small pokkes."

That smallpox was no respecter of persons is shown by the long list of notables who died from the disease. Among them were William of Orange, Emperor Joseph I of Germany, Peter II, Emperor of Russia, Louis XV of France, two children of Charles I of England, a son and daughter, Queen Mary, of James II of England, and his brother, the Duke of Gloucester, the son of Louis XIV, and Louis, Duke of Burgundy. Others had the disease, but it did not prove fatal. Among these were Queen Anne of England, Peter III of Russia, Louis XIV of France, William III, and Queen Maria Theresa of Austria. We may judge of the prevalence of the disease from the words of Ben Jonson, who wrote: "Envious and foul disease, could there not be One beauty in our age and free from thee!" and again the words of George Bell of Edinburgh: "The smallpox ever since its introduction to Europe more than a thousand years ago has descended with undiminished violence from generation to generation." Dr. Lettson wrote in 1801: "In reflecting upon its ravages the mind revolts in horror." Smallpox before the days of vaccination was chiefly a disease of children, and the adult population consisted mainly of survivors of a childhood attack. In those days in Europe there were four hundred thousand deaths annually from smallpox. In the year 1702-1703 there were three thousand deaths among the French inhabitants of the city of Quebec. Each day the bodies were brought to a church or to the cathedral and at night buried together, sometimes by the score.

Cow pox vaccine was given to the world by Edward Jenner in the year 1798, and from that time the conquest of the scourge began and has now reached its culmination in practically ridding civilized countries of one of the most hideous plagues in the history of medicine.

Venereal Disease Control in Great Britain.—That the British Government is fully alive to the gravity of the problem of the venereal diseases and to the importance of doing everything possible for the improvement of the public health in this respect was made clear by the Rt. Hon. L. S. Amery, Secretary of State for the Colonies, in the opening address of the Imperial Social Hygiene Congress, recently convened under the presidency of Sir Auckland Geddes. The ancient policy of hushing up the evil, said the Secretary, could only give dangerous results, but happily that point of view has entirely vanished. In 1911 it was practically impossible to get a single member of Parliament to say a word about these diseases. When in that year Lloyd George, as a young member, pleaded for a recognition of these diseases, he felt almost an outcast. The changed outlook is indicated by the fact that in 1924 nearly 400,000 pounds was spent by the Government in improving the health of the country through venereal disease control measures. The situation, according to Mr. Amery, is distinctly hopeful, because, from the medical point of view, there is no range of disease so definitely capable of being dealt with and cured if public opinion is only strong enough. This weakness of public opinion, reflected in ignorance, indifference and fatalism, has been the great difficulty in the past. He concluded his address with the observation that by treating these diseases quite frankly as diseases, by making medical care easy and natural, and by removing all question of stigma, he believed that a solution of the problem could be arrived at.

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LITERATURE SENT UPON REQUEST

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New York Chicago New Orleans St. Louis Atlanta Philadelphia Kansas City San Francisco

Hospital Equipment of the Malolo.—Many who are still in the prime of life can remember the day when even on passenger liners of the better class the hospital facilities were crude and entirely inadequate. Conditions have improved greatly in recent years, however, and the progress that has been made is strikingly illustrated by the specifications for the hospital equipment of what is to be the largest and fastest high powered passenger steamer ever built in the United States.

The vessel is the *Malolo* (Hawaiian for *Flying Fish*) which is now being constructed for the Matson Navigation Company at Cramp's Shipyard, Philadelphia. When completed in the spring of 1927 she will be placed on the San Francisco-Honolulu run. With her 22,000 ton displacement, her 582 foot length, and her 83 foot beam she will be one of the finest vessels on the Pacific. Her speed of twenty-five miles an hour will enable her to make the round trip in four days less than the fastest vessel now plying between the two ports.

The passenger hospital will include two wards, a bath, dispensary, operating room, and an attendant's room. The crew hospital will consist of a ward and a bath. Each of the passenger wards will accommodate four persons, while the crew's ward will take care of six persons. In addition to the berths, each ward will be fitted with a desk, three white enamel hardwood chairs, and with portable trays of hardwood which can be attached to the berths for the use of patients when taking their meals.

The equipment of the operating room will include the usual operating table, anesthetist's outfit, sterlizing outfit, instrument and dressing cabinet, etc. The dispensary will be fitted out with the necessary desks, chairs, dressers, medicine cabinets, bottle racks, etc. The hospital will be floored throughout with special composition flooring and ceramic tile. The walls will be painted with white enamel.

The quality of the *Malolo's* accommodations as a whole will be in keeping with the complete and thoroughly modern equipment of the hospital. Her 600 passengers—all first class—will be accommodated in 274 staterooms. There will be 160 private baths. On "A" deck will be located the ballroom, lounge, library, smoking room, and veranda; all connected on the port side by spacious foyers and galleries. The main dining room, extending the full breadth of the ship, will be 108 feet long. At its forward end will be two alcove coffee rooms suitable for use as auxiliary dining rooms, or for private dinner parties.

A gymnasium, a swimming pool, and electric baths will be provided. A complete system of mechanical ventilation will be installed for use in the tropical climate which the vessel will encounter on her voyage to the Hawaiian Islands.

The total cost of this newest addition to the American merchant marine will be $6,500,000.

New Forms for Reporting Stillbirths.—New forms of stillbirth certificates came into use on January 1st. These certificates are printed on pink paper and combine all data necessary to record a stillbirth both as a birth and as a death.

It may be well to recall, says *Health News*, that a stillbirth is defined in the law as that of a child born dead after reaching the fifth month of uterogestation, that such a child must be registered as a birth and also as a death, that a medical certificate of the cause of death must be signed by the attending physician, if any, who should state "the cause of death as stillborn with the cause of the stillbirth, if known, whether a premature birth, and if born prematurely the period of uterogestation in months if known."

The purpose of this provision is to insure complete registration of this important class of births and infant deaths. Hitherto, a stillbirth had to be registered on too separate certificates—as a birth and as a death. To simplify the procedure, during the last session of the legislature the law was amended making possible the registration of a stillbirth on one certificate.

The procedure in filing these certificates will be similar to that of ordinary death certificates and the duty devolves upon the undertaker or person in charge of the burial. If the father or some member of the family desires to bury the body, the physician who attended the birth is requested to advise them to obtain a stillbirth blank from the local registrar, to fill it out carefully according to instructions printed on its reverse side, and obtain a burial permit prior to the burial or other disposition of the body within seventy-two hours after the occurrence of the stillbirth.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

OLD AND NEW VIEWPOINTS IN PSYCHOLOGY. By Knight Dunlap. St. Louis: C. V. Mosby Company, 1925. Pp. 166.

THE WRITING OF MEDICAL PAPERS. By Maude H. Mellish. Second Edition, Revised. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 1925.

AN INTRODUCTION TO OBJECTIVE PSYCHOPATHOLOGY. By G. V. Hamilton, M.D. With Foreword by Robert M. Yerkes, Ph.D., LL.D., St. Louis: C. V. Mosby Company, 1925. Pp. 354.

PEDIATRICS OF THE PAST. By John Ruhräh, M.D. With a Foreword by Fielding H. Garrison, M.D. With 84 Text Illustrations and 18 Full Page Plates. New York: Paul B. Hoeber, 1925.

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THE ART OF MEDICAL TREATMENT. With Reference Both to the Patient and to His Friends. By Francis W. Palfrey, M.D. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 463.

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NEUROLOGICAL FRAGMENTS. By J. Hughlings Jackson, M.D., F.R.S., F.R.C.P., With Biographical Memoir, by James Taylor, M.D., F.R.C.P., and including the "Recollections" of the late Sir Jonathan Hutchinson and the late Dr. Charles Mercier. New York and London: Oxford University Press, 1925. Pp. 227.

TEXTBOOK OF NERVOUS DISEASES. For the Use of Students and Practitioners of Medicine. By Charles L. Dana, M.D., LL.D. Tenth Edition, with Two Hundred and Sixty-two Illustrations Including Four Plates in Black and Color. New York: William Wood and Company, 1925. Pp. 667.

LA FUNZIONE ENDOCRINA DELLE GHIANDOLE SESSEALI. Conferenze Tenute ai RR. Instituti Clini di Perfezionamento in Milano, per Inixiative dell Instituto Sieroterapico Milanese. Dai Professori: Bruni, Champy, Lugaro, Thorek, Voronoff. Milano: Institute Sieroterapico Milanese, 1925, Pp. 243.

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Miscellany.

Hookworm Disease Spreads to Palestine.—Modern methods of agriculture are blamed for the introduction of hookworm into the Holy Land. Dr. A. Felix, of the Rothschild Hospital in Palestine, who found that about one out of every twelve workmen in the orange groves is affected by the disease, attributes it to the increased use of irrigation in the land. "It is very difficult to trace the source of the infection," said Dr. Felix, "but Egypt, where the hookworm disease is known to exist, is the most likely source because of the large number of Egyptian soldiers who worked here during the war."—*Science News-Letter.*

Venereal Disease Control in Great Britain.—That the British Government is fully alive to the gravity of the problem of the venereal diseases and to the importance of doing everything possible for the improvement of the public health in this respect was made clear by the Rt. Hon. L. S. Amery, Secretary of State for the Colonies, in the opening address of the Imperial Social Hygiene Congress, recently convened under the presidency of Sir Auckland Geddes. The ancient policy of hushing up the evil, said the Secretary, could only give dangerous results, but happily that point of view has entirely vanished. In 1911 it was practically impossible to get a single member of Parliament to say a word about these diseases. When in that year Lloyd-George, as a young member, pleaded for a recognition of these diseases, he felt almost an outcast. The changed outlook is indicated by the fact that in 1924 nearly 400,000 pounds was spent by the Government in improving the health of the country through venereal disease control measures. The situation, according to Mr. Amery, is distinctly hopeful, because, from the medical point of view there is no range of disease so definitely capable of being dealt with and cured if public opinion is only strong enough. This weakness of public opinion, reflected in ignorance, indifference and fatalism, has been the great difficulty in the past. He concluded his address with the observation that by treating these diseases quite frankly as diseases, by making medical care easy and natural, and by removing all question of stigma, he believed that a solution of the problem could be arrived at.

Healthy Recreation the Enemy of Venereal Disease.—The British Navy lost 325,557 days in the year from venereal diseases, according to a statement made by Surgeon Commander T. B. Shaw in a recent address before the Imperial Social Hygiene Congress. In commenting upon the relationship between venereal disease and prostitution, Commander Shaw stated that the abolition of brothels must in the end lead to a material reduction in venereal disease. He pointed out that in Gibraltar the marked decrease in the venereal disease incidence, particularly that of gonorrhea, coincided with the closing of the local brothels and the refusing to renew permits of residence to prostitutes. Healthy recreation, he insisted, was the enemy of the vice with which they were concerned, and that everything possible should be done to insure that seamen on leave would have facilities to indulge in healthy pursuits.

A Clinical Study of Van Den Bergh's Test in Jaundice.—C. H. Andrewes (*Quarterly Journal of Medicine*, October, 1924) presents the results of van den Bergh's test on 184 cases, divided in the following groups: cases of frankly obstructive jaundice; cases of frankly hemolytic jaundice; cases of jaundice not frankly obstructive nor frankly hemolytic; control cases, and in various pathological fluids (cerebrospinal fluid, plural effusions, etc.). As a result of this investigation he states that the test has a considerable clinical value as a method of quantitative estimation of bilirubin in the blood. It enables one to follow the progress of jaundice quantitatively and to detect it when latent. With its aid a pernicious anemia may be distinguished from a secondary anemia. Frankly hemolytic can be distinguished from frankly obstructive jaundice by means of the test, but as a means of differentiating icterus due to liver cell damage from other types of jaundice, the value of the method is slight. Theoretical reasons are advanced why liver cell damage should be able to cause either the direct or indirect diazo reaction. There is a kidney threshold for direct bilirubin corresponding to 3.5 or 4 units of bilirubin in the blood. Some slight individual variation occurs.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LES MÉDICAMENTS CARDIAQUES. Par L. Cheinisse. Paris: Masson et Cie, 1925. Pp. 179.

GLORIOUS APOLLO. By E. Barrington. New York: Dodd, Mead and Company, 1925. Pp. 371.

IMMUNISATION LOCALE. Pansements Spécifiques. Par A. Besredka. Paris: Masson et Cie, 1925. Pp. 252.

TRIAL OF RONALD TRUE. Edited by Donald Carswell. Edinburgh and London: William Hodge and Company Ltd., 1925. Pp. 295.

SUBMUCOUS ENDOCAPSULAR TONSIL ENUCLEATIONS. Excerpts from Clinics of Charles Conrad Miller, M.D. Chicago: The Oak Press, 1925. Pp. 218.

LES VARIATIONS DU CORPS HUMAIN. Par Dr. L. Dubreuil-Chambardel. Avec 104 figures dans le texte. Paris: Ernest Flammerion, 1925. Pp. 250.

OLD NIC IN NICOTINE. Tobacco Lure and Cure. Humanity is Victor. By Nathan Rosenwater, M.D. Cleveland: Nathan Rosenwater, 1925. Pp. 89.

LA TUBERCULOSE PULMONAIRE. Études de Phtisiologie Clinique e Sociale. Par Leon Bernard. Deuxieme Édition. Paris: Masson et Cie, 1925. Pp. 400.

L'OXYDE DE CARBONE ET L'INTOXICATION OXYCARBONIQUE. Étude Chimico-Biologique. Par Dr. Maurice Nicloux. Paris: Masson et Cie, 1925. Pp. 253.

ARTERIOSCLEROSIS. A Summary View. By the late Rt. Hon. Sir T. Clifford Allbutt, M. D. London and New York: The Macmillan Company, 1925. Pp. 108.

THE FELLOWSHIP OF FAITHS. By Alfred W. Martin. Selections from the *World's Great Religions*. New York: Roland Publishing Company, 1925. Pp. 93.

SURGICAL CLINICS OF NORTH AMERICA. Chicago Number, August, 1925. Volume V, Number IV. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 246.

MEDICAL CLINICS OF NORTH AMERICA. New York Number, September, 1925. Volume IX, Number II. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 271.

METHODS AND PROBLEMS OF MEDICAL EDUCATION. Third Series. Division of Medical Education, The Rockefeller Foundation. New York: The Rockefeller Foundation, 1925. Pp. 242.

LA HAUTE FRÉQUENCE EN OTORHINOLARYNGOLOGIE. Par Leroux-Robert. Preface du Professeur D'Arsonval. Avec 74 Figures. Médicine et Chirurgie Pratiques. Paris: Masson et Cie, 1925. Pp. 166.

INTRODUCTION A L'ÉTUDE DES COLLOÏDES. État Colloïdal et Ses Applications. Par W. Kopaczewski. Aved 36 Figures dans le Texte et 2 Portraits Hors-Texte. Paris: Gauthier-Villars et Cie, 1926. Pp. 226.

ELECTROCARDIOGRAFÍA. Estudio téoricopráctico del Electrocardiograma y de sus principales aplicaciones clinicas. Por Dr. Tiburcio Padulla. Con 507 Figures. Buenos Aires: *La Semana Medica*, 1924. Pp. 667.

HISTOLOGY OF THE MORE IMPORTANT HUMAN ENDOCRINE ORGANS AT VARIOUS AGES. By Eugenia R. A. Cooper, M.D. Oxford Medical Publications. Illustrated. London and New York: Oxford University Press, 1925. Pp. 119.

DISEASES OF THE NOSE, THROAT AND EAR. Medical and Surgical. By William Lincoln Ballenger, M.D. Revised by Howard Charles Ballenger, M.D. Fifth Edition, Illustrated with 551 Engravings and 32 Plates. Philadelphia and New York: Lea & Febiger, 1925. Pp. 1080.

LA PRATIQUE DES SANATORIUMS. Conditions hygiéniques et techniques de constructions, d'organisation et de fonctionnement, direction médicale et administrative, régimentation des cures, soins spéciaux, résultats d'après les vingt premieres annees d'exercice des Sanatoriums de Bligny. Illustre. Paris: Masson et Cie, 1925. Pp. 440.

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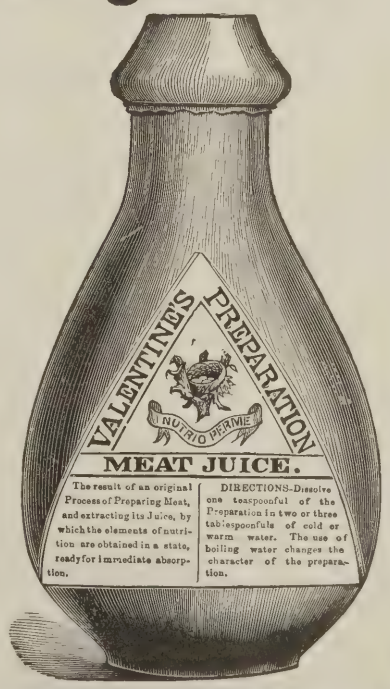
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Miscellany.

Public Health Nursing.—"Public health nursing, a specialized branch of general nursing, has been a natural development of the early work of ministration carried on by the bishops, priests, and deacons of the early church," writes Dr. J. G. Townsend, of the United States Public Health Service (*Public Health Reports,* November 6, 1925). We find a work of visiting nurse service being carried on in the third century as a part of church duty. The instructions for this were: "He is to administer to the infirm, to strangers and widows, to be a father to orphans, to go about into the houses of the poor to see if there is anyone in need, sickness, or any other adversity; he is to care for and give information to strangers; he is to wash the paralytic and infirm . . . He is also to visit inns and see if any poor or sick have entered or any dead are in them." For some reason the church later abandoned this work, so that from about 600 to 1600 A.D. there was no organized care of the sick in their homes.

Before the time of Vincent de Paul (1580-1660), visitations to the sick and their relief were on a basis of pure charity; rich and charitably inclined individuals contributed to the wants and needs of the so-called poor—there were no methods of determining what really constituted poverty. Vincent de Paul was the first to introduce the aspect of social service in home visits. He saw that charity was being carried too far and was encouraging pauperism. He insisted that the condition of the poor be investigated as to whether they could be helped to help themselves, and if this was possible, employment was found for them and they were put into a position of being in part, at least, self supporting. He opposed sending individuals to hospitals or asylums, without positive necessity, but believed in keeping family units intact, even though sometimes it was necessary to pay rent or supply house furnishings. "This was indeed a modern step for those times and is practically what social service in connection with public health nursing does at the present time."

Florence Nightingale's work in the Crimea fortunately brought to her attention the dire need for trained nurses, with the proper interpretation of the word "trained." As a result, in 1860 the first school for nurses was opened with an enrollment of fifteen. They were to have one year's training in the wards of the hospital, after which they were expected to remain one or two years as full fledged nurses. It was these fifteen nurses, disciples of Miss Nightingale, who, in their turn, acted as teachers and from whose efforts the nursing profession as we know it today had its real beginning. With the nursing personnel as it was in those times, it was possible to extend better scientific care, in the matter of district and home nursing, to the poor. William Rathbone of Liverpool has been credited with being the first to inaugurate district nursing. At an early age he was greatly interested in the problems of the poor, and in a practical way learned their needs by making personal visits through courts and alleys, calling from house to house, and so learning something of their medical needs. In order to try out his theories for bettering conditions, he employed a nurse who had been attending his wife and at his own expense obtained her cooperation in making these visits. The reports of her visits are most interesting. We learn that the nurse was instructed, not only to give nursing care to the sick, but to teach their families how to take care of themselves and of their own sick, and how to lead healthful lives. The results of this beginning were so satisfactory that other nurses were put on duty and the work grew rapidly. There was even then a tendency to get away as far as possible from actual medication and to emphasize public hygiene and prophylaxis, even though the knowledge of infectious diseases was at that time very meagre. We read that nurses were urged over and over again not to pauperize the patient by giving medical comforts unless they were absolutely necessary; Florence Nightingale wrote: "If district nurses begin by giving relief, they will end by doing nothing but giving relief."

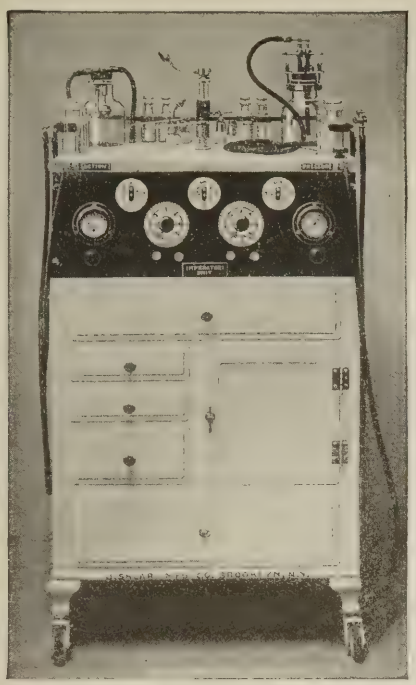
Public health nursing in this country was rather slow in developing. In 1828 Dr. Warrington of Philadelphia, when he was only twenty-three years of age, inaugurated the society of district nursing. At first this gave only qualified nursing attendance to poor women in childbirth, but the work was gradually extended to include all classes.

A district nursing organization was started in Boston in 1886, and in 1888 the association was incorporated under the name of Instructive District Nursing Association, with the purpose not only of caring for the sick, but of giving them instruction in home nursing and public health.

The first special work in district nursing was undertaken in London in 1892, when a staff of visiting nurses was organized to visit schools and inspect school children. Miss Lillian Wald, founder of the Henry Street Settlement, suggested in 1902 the use of the nurse to supplement that of the doctor in the schools of New York. Medical inspection of school children had been in vogue before that time, but was merely a perfunctory examination by a physician, the only thing accomplished being the exclusion of the child—nothing to prevent illness or to instruct the home family in healthful living and proper care was done.

Throughout this time when the public health nurse was making her services more and more frequent and valuable, gradual progress was being made in the requirements of those entering the nursing profession; also, great strides were being made in the medical profession toward the prevention of disease; the dangers of neglected teeth, tonsils and adenoids were becoming known, and the value of scientific infant care. Last came the awakening to the fact that a real health problem exists in the country—one of even greater importance than the urban health question. Country death rates were found to be higher, the morbidity index higher, and lack of protected water and milk supplies, of proper sewage disposal as dangers to which the city dweller is not so subject.

Dr. Townsend concludes his article with the statement that public health nursing is still in its infancy, and that the future holds unlimited service for this branch of the profession. "The difficulty is to find workers; and it is our duty as public health workers to present this problem before the nursing profession with a plea for the *trained* worker."



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The Prevalence of Defective Vision.—Defective eyesight is affecting the country's industrial output, is handicapping education, and is a growing menace to human welfare, says the Eye Sight Conservation Council of America in a comprehensive eyesight survey of two years' duration covering the entire field of eyesight conservation. The deleterious influence of eye defects and eye diseases, it is declared, is a challenge to civilized effort in social control. Massing all existing data, and supplementing it with the results of original research, the Council finds that defective vision is widespread among industrial workers and school children, and that it is a prolific source of waste in industry and education.

Summarizing conditions in education, the report called the most comprehensive of its kind ever completed in this country, says that twenty-five per cent. of the school children in the public schools of the United States "have manifest defects of vision and symptoms of eyestrain." This result was reached through simple visual acuity tests. The survey, it is stated, covers eye tests of more than 14,200,000 school children and students enrolled in public schools, state normal schools, universities and colleges.

Defective vision is increasing among older students, the survey in colleges and normal schools indicates. In sixteen state normal schools and twenty-three colleges and universities having a total enrollment of approximately 100,000 students, 54,695 tests were made, showing that 18,706 or forty per cent. had defective vision.

Two thirds of those reporting found defective vision within the range of from thirty-five to fifty per cent. "It is safe to assume," says the report, "that this prevalence of defective vision among these students at the beginning of their university studies was undoubtedly higher than in their earlier years."

Poor eyes, it is disclosed, induce retardation and are responsible in some measure for the backward student. "The proportion of retardation found among four groups of school children with defective vision, totalling 28,667," the report continues, "varies from sixty to eighty-five per cent. and averages sixty-seven per cent. The prevalence of defective vision, found among six groups of pupils retarded in their progress, varies from twelve to eighty-one per cent."

Eyesight, as an important factor affecting the output of the industries of the United States, is being overlooked, the report asserts. A survey was made to determine the prevalence of visual defects among industrial workers and the methods practised by industrial concerns for examining the eyes of their employees. Information was furnished by 170 companies situated in twenty-three states and employing over one million persons. The data furnished by forty companies were complete enough for adequate summary and comparison.

"The records of these forty companies," the report adds, "cover the examinations of the eyes of 204,817 employees. Even though the prevalence of defective vision was reported by one company as low as 5.3 per cent., which is no indication of the true condition, the average proportion of defective vision as reported by the forty companies was 44.3 per cent.

"The records from twenty companies of 150,782 eye examinations or 77 per cent. of the 204,817 examinations reported showed the prevalence of defective vision ranging from 48.3 per cent. to 79.2 per cent. and averaging 54 per cent.

"This group of 200,000 industrial eye examinations is many times larger than any group that has previously been studied for the purpose of arriving at definite conclusions. It is considered sufficiently large and properly distributed both geographically and according to the type of industry to establish an accurate incidence of the proportion of defective vision among the 42,000,000 gainfully employed persons in the United States."

Sections of the report, compiled by Joshua Eyre Hannum, research engineer of the Eye Sight Conservation Council of America, and edited by Guy A. Henry, the Council's general director, deal with eye hygiene, eye diseases, eye defects, eyesight and education, eyesight and occupation, eye protection, and illumination of school and home.

One section tells of the struggles with poor eyesight of noted persons, including Francis Parkman, Tschaikowsky, George Eliot, William Wordsworth, Theodore Roosevelt, Goethe, Margaret Fuller, Jonathan Swift, John Greenleaf Whittier, H. G. Wells, Honore de Balzac, Adelaide Ristori, Basil King, Taine, and Nietzsche. Whittier, it is said, was color blind, and Taine was crosseyed. Relentless use of the eyes, according to the report, hastened the death of Balzac.

Voltaire, Mr. Shaw, and the Doctors.—Dr. Rolleston has been reminding the Royal Society of Medicine, says the *Manchester Guardian Weekly*, that Voltaire was a great apostle of inoculation against smallpox. More than that, he was a powerful advocate of the profession and a relentless foe of the quack. Perhaps Dr. Rolleston had an eye, as he spoke, on a modern man of letters, who is sometimes compared to Voltaire. Yet perhaps if Mr. Shaw had lived in those days, he would have been on the same side as the great Frenchman. For Voltaire saw two forces in conflict—the obscurantism that was almost all that was left at the moment of the official religion of France, and the eager spirit of inquiry represented by the men of science and the Encyclopedists. In that struggle he was ready to play a modest as well as an heroic part. For when asked to write on Hemistichs for the Encyclopedia he replied: "'Tis not a very brilliant task, but perhaps the article will be useful to men of letters and amateurs. One should disdain nothing, and I will do the work if you choose." Medicine was at a low ebb in France, and it was not until the struggle had ended in a catastrophe which Voltaire could not foresee that it began to advance. In England, on the other hand, medicine was taking its first steps in the eighteenth century as a social and public science, and England was the home of philosophies and movements that Voltaire admired. Voltaire, looking round him, saw the Jansenist persecutions and welcomed any organization of scientific effort. Mr. Shaw, looking round, sees Harley Street where Voltaire saw the Parliament of Paris, and the quack where Voltaire saw the professional doctor. And, however much Mr. Shaw may differ from Voltaire, he resembles him in this: that if he thinks he has a case to put, he takes care that it shall not be misunderstood.

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Jour. of Urology, Dec., 1924, Vol. XII, No. 6.
The Canadian Med. Assoc. Jour. 1925, Vol. XV, p. p. 787-788.
Jour. A. M. A., Dec. 12th, 1925. Vol. 85, No. 24, p. p. 1855-1861.

LITERATURE SENT UPON REQUEST

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Deaths of Physicians in 1925.—During 1925 the deaths of 2,483 physicians in the United States were recorded in the *Journal A. M. A.*, almost the same number recorded in the previous year, which was 2,486. To make a comparison of the two years, the present tabulation will follow closely the editorial of last year. Adding two per cent. to the total number of deaths reported, on account of delayed reports and possible omissions, we estimate the number of physicians who died during 1925 at 2,532. With a total of 147,010 physicians in the United States, the number of deaths is equivalent to an annual death rate of 17.22 per thousand, which is a slight decrease over last year. The average annual death rate for physicians, as computed by the *Journal A.M.A.* for the last twenty-four years, is 17.08.

AGES

The age at death of 2,448 physicians whose age was stated varied from twenty-five to one hundred and seven years. Twenty-one of the decedents were under thirty years of age; 119 were between thirty-one and forty; 368 between forty-one and fifty; 560 between fifty-one and sixty; 665 between sixty-one and seventy; 489 between seventy-one and eighty; 207 between eighty-one and ninety, and eighteen between ninety and ninety-nine. There was one death at the age of one hundred and seven. The largest number of deaths occurred at ages sixty-six and sixty-seven, the number dying at each of those ages being seventy-nine. The largest number of deaths reported at any given age last year was at sixty-five. There were more deaths reported in August than in any other month (243); the smallest number was reported in December (155).

CAUSES OF DEATH

Among 2,420 reported deaths for which specific causes were given, diseases of the circulatory system accounted for 872, the largest number by systems. Of these, heart disease caused 559 deaths, angina pectoris being specified in ninety, myocarditis in eighty-one, acute dilatation in twenty, endocarditis in fourteen and valvular disease in twelve; cerebral hemorrhage was specified as the cause of 233 deaths, and was the second most frequent cause given, as it was last year. Diseases of the respiratory system, exclusive of tuberculosis, accounted for 278 deaths, of which 222 were due to pneumonia, twenty-six to influenza, twelve to asthma, four to pulmonary edema, and two to cancer of the lung. Diseases of the genitourinary system caused the death of 227 physicians, of which number 161 were due to nephritis, forty-one to uremia, fourteen to diseases of the prostate, and one to hypernephroma. Diseases of the digestive system, exclusive of cancer and diabetes mellitus, accounted for 108 of the deaths reported, of which thirty-three were due to appendicitis, sixteen each to peritonitis and cirrhosis of the liver, nine to gastric ulcer, two to duodenal ulcer, thirteen to cholecystitis or gallstones, ten to acute intestinal obstruction, two to abscess of the liver, two to enteritis, and one each to atrophy of the liver, pancreatitis and colitis. Among the socalled general diseases, cancer accounted for 118 deaths. The organs most frequently cancerous were the stomach, twenty-six; intestine, twelve; pancreas, eight; prostate, seven; throat and adjacent parts, eleven, and the liver and bladder, each six. Tuberculosis under this classification was the second most frequent cause of death given, with fifty-two; then erysipelas, eight; typhoid fever, seven; scarlet fever, two; leucemia, three; diphtheria, alcoholism, pellagra, acute articular rheumatism and purpura hemorrhagica, each one. Diseases of the nervous system caused seventy-three of the deaths reported, of which nineteen were due to some form of paralysis; nine each to brain tumor and meningitis; seven to paresis; six to epidemic encephalitis; five to insanity; two each to multiple sclerosis, hiccup, brain abscess and paralysis agitans, and one each to concussion of the brain, tumor of the spinal cord, and transverse myelitis. The cause was not given in sixty-three deaths reported, and 234 deaths were ascribed to senility, each of the decedents being more than seventy years of age, with no other cause stated. It is obvious that there is much to be learned about causes of deaths among aged physicians, and assistance in ascribing more definite causes will be greatly appreciated from all persons who send reports.

ACCIDENTS AND HOMICIDES

There were eighty-three deaths reported due to accidents. The automobile was responsible for forty; falls, fourteen; drowning, seven; firearms, six; burns, four; grade crossings, three; asphyxiation, three; röntgen ray burns, two; poison, two; the airplane, street car and electric shock, each one. There were three homicides; last year, thirteen.

SUICIDE

Fifty-nine physicians ended their lives by suicide: thirty with firearms, five with poison, four with morphine, two with phenol, two by drowning, two by jumping from windows, and one with gas; in thirteen instances the method was not stated.

POSITIONS

Among the physicians who died during the year 1925, there were 137 who served in the World War; eighty-two who were Civil War veterans, and twenty-three who were Spanish-American War veterans. There were eighteen who had been members of state legislatures; eighty-three, members of boards of health; fifty-four, members of boards of education; nine, members of boards of medical examiners; eighteen, mayors of cities; twenty-six, coroners; five, postmasters; fifteen, authors; two, editors; ten, bank presidents; four, lawyers; four, dentists; twenty-one, druggists, and one, a missionary.

RÉSUMÉ

Looking back twenty years, we find that sixty-two physicians died under thirty years of age in 1905, while in 1925 there were only twenty-one; then, there were 103 who died between seventy and eighty years of age, whereas in 1925 there were 489; then, there were 239 who died between eighty and ninety years of age, and in 1925 there were 207 between eighty-one and ninety; then, there were twenty-five who died beyond ninety years of age, and in 1925 there were nineteen; then, there were two who passed the century mark, and last year there was only one.—*Journal A. M. A.*, January 9, 1926.

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Syphilis and Heart Disease.—The relation between syphilis and cardiac disease was discussed at the recent sessions of the Imperial Social Hygiene Congress (British) by Colonel Sir Leonard Rogers, representing the Government of India. He said that practically the whole of heart disease in India was due to syphilis and concluded that the eradication of it would reduce heart trouble there to negligible proportions.

In this connection it might be observed that India is not alone in recognizing the great socioeconomic problem of controlling syphilis. The United States Public Health Service has recently issued a compilation of abstracts relating to visceral syphilis for use in its cooperative work with the State departments of health in the control of venereal diseases. These abstracts reflect the causative influence of syphilis in diseases of the heart, aorta and peripheral bloodvessels. Special attention is being given in all countries to the prevention of these diseases by prompt adequate treatment in the early stages of syphilis before the heart and bloodvessels become involved.

Charts Showing Posture Standards.—The Children's Bureau of the United States Depatrment of Labor will issue early in 1926 a set of six charts on posture standards for boys and girls, intended for the use of physicians, nurses, physical education teachers, and clinics.

The charts were planned on the basis of extensive observation and measurement of school children by Dr. Armin Klein, of Boston, who is in charge of posture clinics for the Massachusetts General Hospital and the Department of Health of the city of Boston. They will be useful, it is believed, in affording visual illustrations of posture types and groups for purposes of classification and comparison. In devising the charts it has been recognized that there are certain distinct types of physique and that the standards of good and bad posture must be considered in relation to the physical type. Three types of figures are shown for both boys and girls—the thin, the intermediate, and the stocky. Each chart shows four silhouette figures illustrating excellent, good, poor, and bad posture for one type of girl or boy.

Descriptions of the distinguishing characteristics of excellent, good, poor, and bad posture are printed on each chart. In excellent posture, the charts point out, the head is up and the chin in; in good posture the head is slightly forward, in poor posture it is forward, in bad posture it is markedly forward. In excellent posture the chest is up and the breast bone is the part of the body farthest forward, in good posture the chest is slightly lowered, in poor posture it is flat, in bad posture it is depressed or sunken. In excellent posture the lower abdomen remains in and flat, in good posture it is in but not flat, in poor posture it is relaxed and is the part of the body farthest forward, in bad posture it is completely relaxed and protuberant. In excellent posture the curves of the back are within normal limits, in good posture they are slightly increased, in poor posture they are exaggerated, in bad posture they are extremely exaggerated.

Each chart is approximately twenty-four by thirty-four inches. A limited number of the charts are available for free distribution; others may be secured from the Government Printing Office.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE MERCHANTS' ASSOCIATION OF NEW YORK. Year Book, 1925. New York, 1925. Pp. 361.

APPLIED BIOCHEMISTRY. By Withrow Morse, Ph.D. With 257 illustrations. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 958.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints, Volume LIV. New York: Rockefeller Institute for Medical Research, 1925. Pp. 625.

SCOLIOSIS. Rotary Lateral Curvature of the Spine. By Samuel Kleinberg, M.D., F.A.C.S. New York: Paul B. Hoeber, Inc., 1926.

MINOR SURGERY. By Lionel R. Fifield, F.R.C.S. (Eng.). With 273 Illustrations. New York: Paul B. Hoeber, Inc., 1925. Pp. 431.

SELECTED PAPERS, SURGICAL AND PATHOLOGICAL. By F. T. Paul, D.Sc., F.R.C.S. London: Baillière, Tindall and Cox, 1925. Pp. 284.

PLASTIC SURGERY OF THE NOSE. By J. Eastman Sheehan, M.D., F.A.C.S. With a Foreword by J. F. Erdmann, M.D., F.A.C.S. Illustrated. New York: Paul B. Hoeber, Inc., 1925. Pp. 249.

FORTSCHRITTE DER SEXUALWISSENSCHAFT UND PSYCHANALYSE. Herausgegeben von Dr. Wilhelm Stekel, redigiert von Dr. Anton Missreigler und Emil Guthell. Band II. Leipzig und Wien: Franz Deuticke, 1926. Pp. 575.

RADIOGRAPHY. A Manual of X Ray Technique, Interpretation, and Therapy. By Charles D. Enfield, M.D., F.A.C.P. With 194 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1925. Pp. 298.

MEDICAL CLINICS OF NORTH AMERICA. (New York Number, November, 1925.) Volume IX, Number III. Illustrated. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 312.

LECTURES ON NUTRITION. A Series of Lectures given at the Mayo Foundation and the Universities of Wisconsin, Minnesota, Nebraska, Iowa, and Washington, 1924-1925. Illustrated. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 243.

LECTURES ON HEREDITY. A Series of Lectures given at the Mayo Foundation and the Universities of Wisconsin, Minnesota, Nebraska, Iowa, and Washington, 1924-1925. Illustrated. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 250.

DISEASES OF CHILDREN. By the late Sir James Frederic Goodheart, Bart., M.D., F.R.C.P. Twelfth Edition, edited by George Frederic Still, M.D., F.R.C.P. With sixty-eight illustrations. Philadelphia: Lea & Febiger, 1926. Pp. 966.

MODERN DIAGNOSIS AND TREATMENT OF SYPHILIS, CHANCROID, AND GONORRHEA. By L. W. Harrison, D.S.O., M.B., M.R.C.P.E. Modern Medical Monographs, Edited by Hugh MacLean, M.D. New York: Paul B. Hoeber, Inc., 1925. Pp. 167.

SKULL FRACTURES. Röntgenologically Considered by William H. Stewart, M.D., with Surgical Comments by William H. Euckett, M.D. Annals of Röntgenology; a Series of Monographic Atlases, Edited by James T. Case, M.D. Volume Six. New York: Paul B. Hoeber, 1925.

EXPERIMENTAL INVESTIGATIONS INTO THE EMOTIONAL LIFE OF THE CHILD COMPARED WITH THAT OF THE ADULT. By Helga Eng. Translated by George H. Morrison, M.D. (Edin.). Oxford Medical Publications. London and New York: Oxford University Press, 1925. Pp. 239.

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume XV, Part Two, Medical and Casualty Statistics. Prepared Under the Direction of Major-General M. W. Ireland, by Major Albert G. Love, M.C., U. S. Army. Washington: Government Printing Office, 1925. Pp. 1368.

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Miscellany.

Knights of St. John.—It is reported that the English Grand Priory of St. John has just acquired the freehold of a small portion of the historic site, now known as the Muristan, upon which stood the great Hospital of St. John in Jerusalem, says the *Medical Press and Circular,* January 13, 1926. Nearly seven and a half centuries have passed since the Crusaders' Kingdom of Jerusalem fell before the victorious Saladin, and the Hospitallers were expelled from the Holy City. Their great hospital contained separate wards for men and women, a hospice for pilgrims, the Convent of St. Mary Magdalen which provided the nursing Sisters for the sick women, and the administrative offices of the Order with accommodation for some two hundred knights, who attended upon the male patients, and the storerooms and dispensaries of the hospital. It is said that Saladin used one part of it as a palace and made a lunatic asylum of another, and that in later years a Moslem hospital carried on the ancient traditions associated with the site. Before the conquest of the Crescent, a visitor recorded that as many as two thousand sick persons were at one time within the wards of the hospital, and the Grand Master, in 1177, ten years before Saladin's entry, wrote in a letter that seven hundred and fifty men, wounded in action, and nine hundred civilians, had been admitted for treatment. The Church of St. John, which dates from Byzantine times, still survives, and at the invitation of the Patriarch of Jerusalem the Knights of the English Grand Priory, in the pursuit of their mission, will make use of one of its chapels. Ere long the traveler will see another Hospital within the Muristan.

La Politique du Médecin of J. O. de la Mettrie.—*Medicina* for November, 1924, reprints some extracts from a curious libel published in 1746, condemned to be burned by the Parliament of Paris, and whose author, Julien Offray de la Mettrie, had to flee to Leyden. *La Politique du Médecin de Machiavel* had a scandalous success; altogether forgotten today, it is nevertheless for the history of physicians of the eighteenth century of incontestable documentary value. Under his transparent pseudonyms, de la Mettrie sketched with a pencil pitiless and cruel, often scurrilous, sometimes unjust, the portraits of contemporary doctors.

Let us quote the following lines from the chapter devoted to Astruc (Chrysologue): "Here is still another wise man, but a lesser light. Geometrician —a bad geometrician—entomologist, antiquary, theologian—Molinist theologian, to please the Jesuits whose physician and cardinal he is—and he has prudently made of this a support; lawyer, politician, historian, naturalist, doctor . . . He has studied everything, learned everything, except his profession . . . But this man who is all and nothing, has imposed upon it all a universality of knowledge necessarily superficial." Jean Astruc was consulting physician to Louis XV.

The best portrait of all is that of Sylva, also consulting physician to the king. See with what art de la Mettrie deals with this personage: "Who is this physician who ascends into his equipage with so much éclat that the commotion is heard from one end of the court to the other; whom they sustain as he dismounts; and whom they bear in some way even up to the Grand Stairway itself. It is la Forest! What handsome horses! With what art does the coachman make them paw the air and turn about at the command of the master; the noise they make announces this brilliant personage, but does not prevent him from halting to talk of serious matters with one of his colleagues. . . . But there is a chamber maid passing; he stops suddenly to approach her, and asks her about her health. What pretty things he says! With what a gay manner he follows her out of sight. He returns anon and resumes the thread of the conversation. . . . 'Let us always,' he says, 'be kind to chamber maids; they make it up to us in their mistresses' toilettes.'" He goes on to paint the author, the man, and the gallant doctor. . . . As to the man, there is a most indiscreet reminiscence of unfortunate conjugal experiences, and he passes on to the gallant doctor, of whom he dissertates at length, for he was, he says, "both indecent and immoral." He cites many other anecdotes little edifying, paints complacently his affairs with his beautiful clients, whom he chose, he says, with all the indiscretion of a libertine, without respect for rank, nor for dignity, boasting of favors that he had never even asked for."—*Translated from Æsculape.*

Curious Privileges of Provençal Students in the Fourteenth Century.—Prof. Chauvin of Marseilles, devoting the first lesson in his course in urology to ancient faculties of medicine of the Provençal region, said that we must return to the ninth century for the beginning of medical science in Provence, as in the rest of the middle of Europe. It was in 1303 through a bull dated at Anagni that Pope Boniface VIII created the University of Avignon, where were taught civil and religious law, medicine and the liberal arts. Created by the pope, protected by the king Charles II, richly endowed, the university did not wait long to shine brilliantly as an educational center. Created a little later by Louis II, king of Sicily and Naples, the faculty of Aix followed a like development. Both during the centuries were rivals in learning and zeal; both grew dark at the same time in the cataclysm of the Revolution.

From the very interesting talk which Prof. Chauvin devoted to the history of these two ancestors of the young school at Marseilles, let us quote a few lines relating to the privileges accorded to the students of Provence: "They were exempt from taxes and protected against the police. . . . For them were created, by the princes of the Church or by the laity colleges where youths without means were received. From the fourth century there existed at Montpelier four colleges; there were at least eight at Avignon, of which two received gratuitously thirty-six students each. Aix possessed none and when the king René established six funds for poor students, he sent them to the college of Roure in Avignon. Fed and lodged, the student, then, had only to provide his pocket money, which they did by employing some methods which in our day would be considered lawless and barbarous in the extreme."—*Translated and abstracted from Æsculape.*

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Literature on Request

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The Commonwealth Fund.—In the seventh annual report, issued recently, announcement is made that gifts totaling $1,339,000 for scientific, educational and humanitarian work were made by the fund during the year ending September 30, 1925.

Child welfare has been one of the chief interests of the fund since its organization, and two major projects in this field, involving grants to a dozen different organizations, received approximately $847,000 of the fund's income during the past year. Appropriations totaling $425,000 were shared by the National Committee for Mental Hygiene, the National Committee on Visiting Teachers, the Joint Committee on Methods of Preventing Delinquency, and the New York School of Social Work, in a continuing program of child guidance and the prevention of delinquency. This program, initiated by the Commonwealth Fund in 1921, has already resulted in the establishment of psychiatric clinics for the study of "problem children" in seven American cities, while visiting teacher service has been organized in ten representative communities throughout the country.

Additional grants made by the Commonwealth Fund in the field of mental hygiene included $10,500 to the Children's Memorial Clinic in Richmond, $36,000 to the University of Pennsylvania School of Medicine for psychiatric fellowships, $15,000 to the College of Physicians and Surgeons, Columbia University, for the development of its psychiatric clinic, $5,500 to the Berkshire Industrial Farm for the study of case records of delinquent boys, and $6,000 to the Smith College School of Social Work for fellowships in psychiatric social work.

Appropriations totaling $241,000 were made for the fund's child health program, which includes community demonstrations in Fargo, N. D., Athens, Ga., Rutherford County, Tenn., and Marion County, Ore. Another branch of the child health program is being pursued in Austria, where one hundred and four child health stations are being operated, together with a variety of supplementary work involving last year a grant of $100,000.

The most recent enterprise of the fund is a program of assistance to rural communities in establishing hospitals. A gift of $85,000 for a small hospital at Murfreesboro, Tenn., while not strictly a part of this program, marks the first definite effort of the fund along this line, and studies are being continued for the development of a plan which will provide for the construction of two rural hospitals each year.

Among miscellaneous special grants during the past year were the following: $15,000 to the American Society for the Control of Cancer for its educational campaign; $40,000 to the Foreign Language Information Service for Americanization work; $22,850 to the Hunan-Yale College of Medicine in China; $20,000 to the National Association of Travelers' Aid Societies; $15,000 to the National Board of Medical Examiners for the furtherance of standardization and reciprocity in the licensing of medical practitioners throughout the United States; $7,500 to the Presbyterian Hospital for research work; $6,000 to New York University for research in scarlet fever immunization.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LA CURIETHÉRAPIE DES CANCERS. Par Simone Laborde. Paris: Massone et Cie, 1925. Pp. 327.

IDLE HOURS OF A VICTORIOUS INVALID. By Lane Crawford. London: Chapman & Hall Limited, 1925. Pp. 245.

A TEXTBOOK OF PHYSIOLOGY. By William D. Zoethout, Ph.D. Second Edition. St. Louis: The C. V. Mosby Company, 1925. Pp. 616.

LE FREUDISME. Exposé et Critique. Par le Dr. J. Laumonier. Biblioteque de Philosophie Contemporaine. Paris: Felix Alcan, 1925. Pp. 172.

AMERICA AND GERMANY, 1918-1925. By Sidney Brooks. With a Preface by George Barr Baker. New York: The Macmillan Company, 1925. Pp. 191.

LA PSYCHIATRIE EN CLIENTÈLE. Par Rene Charon. Comment Guérir? Biblioteque des Praticiens. Paris: A. Maloine et Fils, 1924. Pp. 152.

EKZEM UND URTIKARIA. Klinik, Pathogenese und Therapie. von Dr. Erwin Pulay. Berlin und Wien: Urban & Schwarzenberg, 1925. Pp. 191.

CORNELL UNIVERSITY MEDICAL BULLETIN. Volume XV, No. 1, July, 1925. Studies from the Department of Surgery. New York: Cornell University, 1925.

ACUTE INFECTIOUS DISEASES. Handbook for Practitioners and Students. J. D. Rolleston, M.D. New York: Physicians and Surgeons Book Company, 1925. Pp. 376.

ULTRAVIOLET RAYS IN THE TREATMENT AND CURE OF DISEASE. By Percy Hall, M.R.C.S. With Introductions by Sir Henry Gauvain, M.D., and Leonard E. Hill, M.B. St. Louis: C. V. Mosby Company, 1924. Pp. 110.

AN INTRODUCTION TO THE MIND IN HEALTH AND DISEASE. For Students and General Practitioners Interested in Mental Work. By T. Waddelow Smith, F.R.C.S. New York: William Wood and Company, 1925. Pp. 235.

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES. For the Fiscal Year, 1925. Treasury Department Document No. 2958. Washington: Government Printing Office, 1925. 314.

THORACIC SURGERY. The Surgical Treatment of Thoracic Disease. By Howard Lilienthal, M.D., F.A.C.S. In Two Volumes, with 904 Illustrations, 13 in colors. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 1294.

MEDICAL HEREDITY. Distinguished Children of Physicians (United States, to 1910.) By William Browning, Ph.B., M.D. With and Introduction by Charles B. Davenport, Ph.D. Baltimore: Norman Remington Company, 1925. Pp. 249.

TEXTBOOK OF MEDICAL DISEASES. By James M. Anders, M.D. and L. Napoleon Boston, M.D. Third Edition, Entirely Reset. With 555 Illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 1422.

PANCRÉATITES CHRONIQUES AVEC ICTÈRE.. Causes, Diagnostic et Traitement. Valeur et Résultats Éloignés de la Cholécystogastrostomie. Par Dr. Pierre Mallet-Guy. Préface de M. le Prof. Bérard. Paris: Masson et Cie, 1925. Pp. 265.

INTRAVENOUS THERAPY. Its Application in the Modern Practice of Medicine. By Walton Forest Dutton, M.D. Illustrated with Sixty-four Halftones and Line Engravings, Some in Color. Second Revised and Enlarged Edition. Philadelphia: F. A. Davis Company, 1925. Pp. 594.

TAYLOR'S PRACTICE OF MEDICINE. Thirteenth Edition, by E. P. Boulton, M.D., F.R.C.P., With the Assistance of C. Putnam Symonds, M.D., F.R.C.P., and H. W. Barber, M.B., F.R.C.P. With 48 plates and 93 text pictures. Philadelphia: P. Blakiston's Son & Co., 1926. Pp. 1063.

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Miscellany.

Size of Families.—The Department of Commerce announces that in 28 states there were 270,045 women aged 35 to 44 years of age who became mothers in 1924 and who had husbands engaged in gainful occupations.

The total number of children ever born to these mothers, including the births of 1924, was 1,708,927, or an average of 6.7 per mother, and the total number living was 1,450,608, or an average of 5.3 per mother.

Of these mothers 202,460 were aged 35 to 39 years, and for mothers of this age group the average number of children ever born was 5.9 and the average number living was 5, while for 67,585 mothers aged 40 to 44 the average number of children ever born was 7.3, and the average number living was 6.2.

Considering only mothers aged 35 to 39 years, the highest average number of children ever born (7.4) appears for the wives of coal mine operatives and the lowest average (3.3 each) for the wives of chemists, assayers, and metallurgists, dentists, physicians and surgeons, and technical engineers; the highest average number of children living (6) appears for the wives of coal mine operatives and the lowest average number of children living (2.9 each) for the wives of dentists and technical engineers.

Considering only mothers aged 40 to 44 and only those occupations represented by at least 100 births, the highest average number of children ever born (9.1) appears for the wives of other mine operatives and the lowest average (4) for the wives of lawyers, judges and justices; the highest average number of children living (7.5) appears for the wives of other mine operatives and the lowest average number of children living (3.6) for the wives of lawyers, judges, and justices.

Distribution of Rat Virus Contrary to Law.—The necessity for the extermination of rats is acknowledged by everyone. The only question that arises is the choice of method; the one most effective in destroying the rat and the least dangerous to man is, of course, the one most desired.

Cultures of bacteria infectious to the rat, the so-called "rat viruses," have been extensively advocated for the purpose. It has been claimed that they destroy a high percentage of the rats exposed, and that they are harmless to man. Scientific investigations, however, do not bear out these claims. Following studies into the efficacy of the various rat viruses, Rosenau in 1901 and Bainbridge in 1909, reported a limited range of efficiency; the viruses killed only from 20 to 50 per cent. of the rats exposed and the survivors frequently developed an immunity to the culture or became carriers of the organism. Chemical poisons, on the other hand, killed 60 per cent. or more of the animals exposed. Moreover, the innocuousness of rat viruses for man has not been proved. Handson and Williams in 1908 reported an epidemic of enteritis following the use of one of these cultures. Recently, in the *Journal of the American Medical Association,* Spray reported an outbreak of 135 cases of acute gastrointestinal disease in the West Virginia University due to food contaminated as a result of the use of a commercial rat virus.

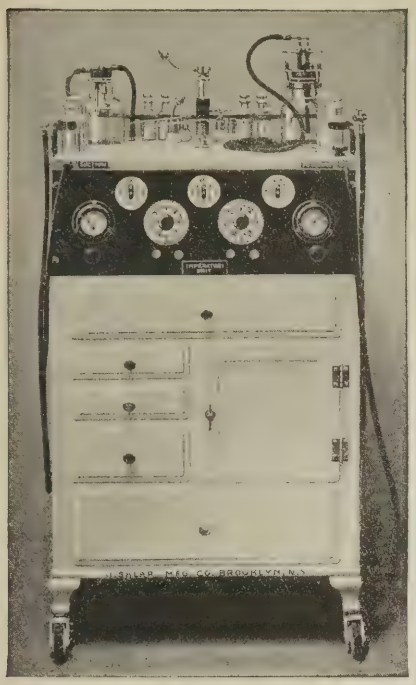
The distribution, by sale or otherwise, of living cultures of disease inducing bacteria, which include rat viruses, is prohibited in New York State unless approval has been obtained from the State Commissioner of Health.—*Health News,* February 15, 1926.

Cattle Tuberculosis.—Carrying the campaign of eradicating animal tuberculosis to areas where it is very strongly entrenched is one of the newer developments in the nationwide program to rout the disease. A survey just completed by the Bureau of Animal Industry, United States Department of Agriculture, shows the aggressive action taken by many counties.

The eradication of tuberculosis under the "area" plan is now being conducted in 34 of the 98 counties having more than 15 per cent. of tuberculosis infection among cattle, and in 54 of 165 counties containing cattle that are tuberculous to the extent of more than 7 per cent. but not more than 15 per cent. Thus, about one-third of the most badly infected counties have eradication work under way. Two of the counties, formerly very seriously affected, have already reduced the infection to 0.5 per cent. or less and are in the "modified accredited area" class.

There are 241 counties in the country where tuberculosis among cattle exists to the extent of more than 3 per cent. and up to 7 per cent. Of these counties 93 are conducting area work to eradicate the disease and 8 of them already have qualified as modified accredited areas. The work is also going forward rapidly in the more lightly affected areas where sentiment strongly favors eradicating the disease before it becomes more serious. At the beginning of 1926 the list of modified accredited areas totalled 149 counties, thus indicating excellent progress toward the conquest of the disease.

Marriage in Norway.—Since 1919 restrictive marriage laws have been in force in Norway. The inhibitions against marriage apply to any person who is insane or suffering from syphilis in an infectious stage. Gonorrhea (still infectious), epilepsy or leprosy forbids marriage, unless the other party to the contract is cognizant of the fact, and both have been warned by a doctor of the dangers of the disease. Doctors are compelled to notify the authorities if they, professionally or otherwise, become cognizant of the existence of these forms of disease in one who is contemplating marriage. If one of the parties has been insane, and has not been certified as cured, or if either is thought to be at present insane, a certificate must be provided indicating that insanity is not at present demonstrable. A person who was insane at the time of marriage may claim dissolution and a divorce may be obtained by the other party if he or she was ignorant of the insanity at the time of marriage. Certain questions have to be answered by both parties in writing, among others being particulars of relationship by birth or marriage, of previous marriage, and of previous children born out of wedlock. In the case of false statements two years' imprisonment may be inflicted.—*Medical Press and Circular,* December 2, 1925.



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Dr. C. A. M. of Atlantic City, New Jersey, writes us under date of January 20th, 1926, as follows:

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Kindly send me one thousand (1000) tablets of Diabesan. I am using your Diabesan in many cases of intestinal toxemia and diabetes with surprising good results.

Enclosed please find check.

With my best regards,

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(Signed) C. A. M., M.D."

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Literature on request

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An Analysis of Twenty Fatal Diphtheria Cases.—The Division of Communicable Diseases of the New York State Department of Health has analyzed supplementary reports, received during October, on twenty deaths from diphtheria.

Only five of the patients were visited by a physician on the first day of the disease. Four were first visited on the second day, three on the third, one on the third or fourth, four on the fourth, two on the fifth and one on the seventh. Thus in three fourths of the cases parents were apparently negligent in failing to call a physician on the first day of illness.

The analysis was made in an effort to place the responsibility for these deaths, with the following results:

Parents apparently wholly responsible	9 cases
Physicians apparently wholly responsible	5 cases
Parents and physicians responsible	6 cases

According to the reports, the following omissions and mistakes were made presumably by physicians in the treatment of these patients:

Delay in administration of antitoxin (Of tese, result of culture was apparently awaited in 2 cases)	7 cases
Failure to administer antitoxin	2 cases
Subcutaneous method of administration used	4 cases
Insufficient dosage of antitoxin	5 cases
Antitoxin administered on more than one day	8 cases
Failure to adopt surgical measures in laryngeal type (where death occurred from respiratory obstruction)	2 cases

In two cases no antitoxin was administered, as the physician maintained in one case that it was "septic tonsillitis" and in the other that it was "streptococcus tracheobronchitis." As apparently no culture was taken in either of these cases, it would seem that the burden of proof is on the physician.

No culture was taken in four cases, and in three other cases there was apparently no culture taken. This is in violation of the sanitary code, which requires that cultures be submitted from all persons affected with or suspected to be affected with diphtheria. It should be remembered, however, that cultures in suspected diphtheria cases should not be relied upon for diagnosis. If the disease can reasonably be suspected, antitoxin should be administered at once in sufficient dosage.

Recent reports seem to indicate that insufficient dosage of antitoxin is becoming relatively rare. Much improvement, however, is needed in the direction of giving the patient the benefit of the doubt where diphtheria may be suspected, first in eliminating delay before giving antitoxin, and second in adopting the intramuscular method, or, in severe or late cases, the intravenous method of administration.

New York City Saves 417,000 Lives in Thirty Years.—According to a report just issued by Dr. William H. Guilfoy, Registrar of Records, New York City, if the infantile death rate of 1892 had continued throughout the succeeding years 843,007 children under five years would have died in the old city of New York (Boroughs of Manhattan and Bronx) between January 1, 1893, and December 31, 1922. But in these years the total number of deaths was 425,281, which means that 417,726 lives have been saved in these thirty years.

A New Instrument for a Common Disease

Ninety percent of adults over 40 have diseased gums. Toothbrushes in use are septic and if the gums are tender, the bristles prick or scratch these delicate tissues and "vaccinate" them.

Diseased gums have been difficult to cure because after a dental treatment the patient returns home and re-infects himself with the contaminated brush.

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The 50% Solution may be given directly into the veins if desirable, but it is usually diluted with sterile and freshly prepared distilled water or with physiological salt solution to make a 5% or 10% injection. The absence of preservative makes the solution especially desirable for oral and intrarectal use.

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Renders the urine germicidal.

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REFERENCES ON CAPROKOL

Jour. A. M. A. Dec. 20th, 1924, Vol. 83, p. p. 2005-2011.
Jour. of Urology. Aug., 1925. Vol. XIV, No. 2.
Jour. of Urology, Dec., 1924, Vol. XII, No. 6.
The Canadian Med. Assoc. Jour. 1925, Vol. XV, p. p. 787-788.
Jour. A. M. A., Dec. 12th, 1925. Vol. 85, No. 24, p. p. 1855-1861.

LITERATURE SENT UPON REQUEST

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Automobile Fatalities Reach a New Maximum.—The Metropolitan Life Insurance Company's *Statistical Bulletin* for January states that, as has been the case every year since 1911, the death toll of automobile accidents again increased among Metropolitan policyholders. The actual number of deaths recorded was 2,724 as compared with 2,456 in 1924, and the death rate rose from 15.9 per 100,000 to 16.7. The death rate from this type of accident has increased 50 per cent. since 1920; has more than tripled since 1915; and is now seven times as high as it was in 1911.

Some idea of the growing importance of automobile fatalities may be gained by comparing their death rate in the years 1915 and 1925 with those for certain other causes of death. In 1915, for example, there were two and one half deaths from typhoid fever to every one automobile fatality; in 1925 there were almost four deaths in automobile accidents to every one from typhoid fever. In 1915 there were more deaths from measles than from automobile accidents; in 1925 the death rate for the latter exceeded the measles rate approximately sevenfold. Ten years ago the combined death rate for the four principal communicable diseases of childhood was about seven times as high as that for automobile accidents, and diphtheria alone caused four times as many deaths as did the motor vehicle; but in 1925 the number of deaths from all four diseases combined does not greatly exceed the death toll of the automobile; and the latter now kills three persons to diphtheria's two. The automobile death rate in 1915 was higher than that for diabetes, whereas ten years ago the latter killed three times as many as did the auto. More than one quarter of all the accidental deaths in 1925 were caused by the automobile, which was responsible for only one in every thirteen of the fatal accidents in 1915. Ten years ago, three deaths occurred in railroad accidents to every two due to automobiles; but in 1925 there were nearly four and one half times as many caused by the automobile as occurred in railroad casualties.

Furthermore, automobile casualties have now become one of the worst scourges of childhood. Approximately forty per cent. of these deaths are among children under fifteen years of age. The automobile today is as great a menace to child life as scarlet fever and whooping cough combined.

Embryological Material.—The importance of embryology and of the study of intrauterine changes, both in the fetus and in its surroundings, and the bearing of these details of development on problems of pathological interest, are matters that are being gradually realized within the medical profession. What is not realized, perhaps, is the possible greatness of the importance. The ordinary courses in embryology which are prescribed for the student would be laughable in their inadequacy if it were not that they give him, at any rate, reason for knowing that the human body is not a performed thing, fixed from the beginning, but must bear within itself certain inherited qualities and their stigmata, so that when he has to consider some pathological problem he may perchance remember that there are other questions behind those arising in the postmortem room and pathological laboratory, and this may lead him to seek for authoritative information about them. It is here, unfortunately, that he is very likely to find himself at a loss. There are problems in development that have never been touched and others that have hardly been considered at all. Human organogeny has been worked out with fair accuracy and completeness in its broader aspects, but the finer points and the interplay of factors in the production of results, and the nature of the factors themselves, are still to be done, and it is here rather than in the larger matters that pathology will be looking for help.

To give a simple example of the differences referred to, the known stages of formation of the palate afford an explanation of the anatomical situation of the fissure, but not of the cause of a cleft palate. Here we want information on the factors which cause full growth of the maxillary process and on the causes of its failure in growth, and about these we know nothing. Such matters, more abstract and intricate, which do not come within the purview of the ordinary student, can only be slowly solved by those who devote their time to research of this sort, and they must depend for their material on the clinician, who alone is in the way of obtaining it. Embryologists can obtain specimens at all stages from most animals, but for human embryos they are forced to rely on the help of their practising colleagues. Much of the material procured in this way is abnormal, but that need not deter the practitioner from sending it, for the skilled study of abnormal formations may often throw light on dark places; it is of much more importance that its histological characters are fairly good, whence the attention to preservation asked for in the letter. The study of human embryology in England has hitherto depended on the use of private collections, and it is well to aim at the formation of a large and representative gathering of specimens, in which the help of the practitioner is essential, and surely will not be withheld.—*The Lancet,* January 2, 1926.

Child Marriages in New York State.—Child marriages have assumed the status of a "problem" in the last few years. While in New York the statutory age for marriage is eighteen for women and twenty-one for men, in 1922, the last year for which figures are available, there were solemnized in the State, exclusive of New York City, 172 marriages in which the bride was fifteen years of age or less and 74 marriages in which the groom was seventeen years of age or less. There were 634 brides sixteen years of age and 1,365 brides seventeen years of age. Sixty per cent. of these child-brides came from the rural sections of the State.

New York State is one of the fourteen states in the Union in which, with the consent of the parents, boys and girls *of any age* may legally marry.

At the request of the State Child Welfare Commission a bill has been introduced in the Legislature to amend the domestic relations law under which applicants for marriage, if under sixteen years of age, must have the written consent of the judge of the children's court, or, if there is no such court, of the county surrogate.

In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

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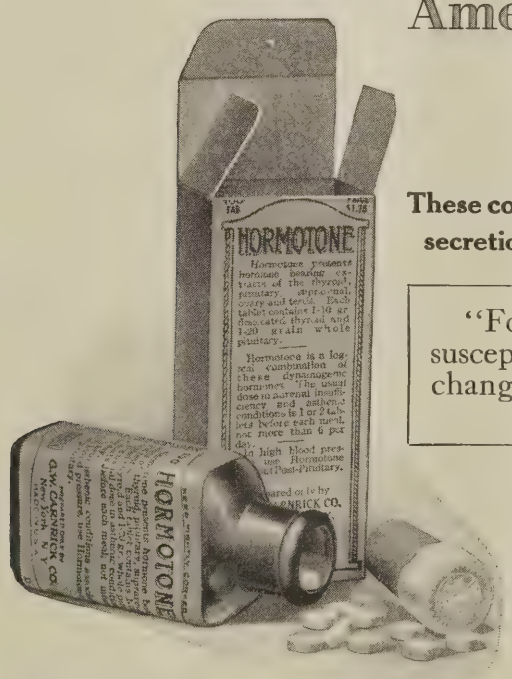

Amenorrhoea
Dysmenorrhoea
Menorrhagia

These conditions are usually disturbances of internal secretions and require internal secretion therapy.

"For the female organism is peculiarly susceptible to physiologic and pathologic changes in the general endocrine system."
Graves—*Gynecology*, 2nd Ed., 1921.

HORMOTONE

restores to normal the endocrine mechanism of menstruation.

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Physicians in Congress.—The Congress of the United States is made up of ninety-six Senators and 435 members of the House of Representatives. About two thirds of these congressmen are lawyers or have had legal training. The remainder are mostly business men, farmers and publishers, with a sprinkling of educators and engineers. Only six are physicians, five of whom are members of the House. There are three dentists, two of whom are in the House. In previous Congresses the number of physicians has been slightly greater, though the profession has never been well represented at the capitol. The only physician in the Senate is Royal S. Copeland, democrat, New York, who was health commissioner of New York City. He has served as vice-president of the American Public Health Association. The dentist in the Senate is Henrik Shipstead, Farmer-Labor, Minnesota. Two other Senators, Woodbridge N. Ferris, Democrat, Michigan, and George H. Moses, Republican, New Hampshire, studied medicine for brief periods. Three of the physicians in the House are Republicans and two are Democrats. Three were in active practice when elected, while one was engaged in farming; the other, who is also a lawyer, was specializing in legal medicine and the practice of law. Dr. E. M. Irwin, Republican, Belleville, Ill., graduated from Missouri Medical College of St. Louis and practiced from 1892 until elected to the Sixty-ninth Congress. Dr. Ladislas Lazaro, Democrat, Washington, La., has been a member of the last seven Congresses. He was educated at Holy Cross College, New Orleans, and graduated in medicine in 1894, having been in active practice until 1913. Dr. John J. Kindred, Democrat, Astoria, N. Y., studied medicine at the University of Virginia and Hospital College of Medicine of Louisville, Ky., from which he took his M.D. degree in 1889. He is also a law graduate and has lectured on medical jurisprudence and is especially interested in mental disease. He served in the Sixty-second Congress and from the Sixty-seventh to date. Dr. William T. Fitzgerald, Republican, Greenville, Ohio, graduated from Wooster University Medical School and practiced until elected to the Sixty-ninth Congress. Dr. John W. Summers, Republican, Walla Walla, Wash., engaged in the practice of medicine for twenty-five years after graduating from the Kentucky School of Medicine and the Louisville Medical College. He has been in Congress since the Sixty-seventh Congress. The two dentists in the House are Dr. Roy O. Woodruff, Republican, Bay City, Mich., and Dr. Frank Crowther, Republican, Schenectady, N. Y. Both have served in a number of Congresses. Although these physicians and dentists are the only representatives of their professions in Congress, the biographic sketches of some other members, as given in the Congressional Directory, reveal an interest in public health and medical matters. Thus Mr. Robert G. Houston, a lawyer, Republican, Delaware, was a member of the first state antituberculosis commission and is now vice-chairman of the commission for the feebleminded, while Representatives Louis A. Frothingham, Massachusetts, Ernest R. Ackerman, New Jersey, and John M. Morin, Pennsylvania, are trustees of various hospitals.—*Journal American Medical Association,* February 13, 1926.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

BULLETIN OF THE AYER CLINICAL LABORATORY OF THE PENNSYLVANIA HOSPITAL. No. 9. Issued October, 1925. Philadelphia: 1925. Pp. 70.

JAPANESE PATHOLOGICAL SOCIETY. Transactions. Volume XIV, 1924. Tokyo, Pathological Institute of the Imperial University, 1924. Pp. 293.

THE PATHOLOGY OF TUMOURS. By E. H. Kettle, M.D., B.S. Lond. Second Edition with 159 Illustrations. New York: Paul B. Hoeber, Inc., 1925. Pp. 285.

CHEMICAL PATHOLOGY. H. Gideon Wells, Ph.D., M.D. Fifth Edition, Revised and Reset. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 790.

PYGMALION. Or the Doctor of the Future. By R. M. Wilson, M.B., Ch.B. Today and Tomorrow Series. New York: E. P. Dutton and Company, 1926. Pp. 67.

CHRONIC DISEASE. A Working Hypothesis. By E. Bach, M.B., B.S., D.P.H. and C. E. Wheeler, M.D., B.S., B.Sc. New York: Paul B. Hoeber, Inc., 1925. Pp. 142.

MEDICAL CLINICS OF NORTH AMERICA. Tulane University Number, January, 1926. Volume IX, No. IV. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 863-1244.

TUMORS OF THE COLON AND RECTUM. Their Pathology, Diagnosis and Treatment. By Jerome M. Lynch, M.D., and Joseph Felsen, M.D. New York: Paul B. Hoeber, Inc., 1925. Pp. 259.

ANLEITUNG ZUM CHEMISCHEN PRAKTIKUM FÜR MEDIZINER. Theoretisches und Praktisches. Von Dr. Phil. Ernst Pfau. Mit 37 Figuren im Text. Leipzig: Johann Ambrosius Barth, 1926. Pp. 96.

AUSTRALIAN TOTEMISM. A Psychoanalytical Study in Anthropology. By Geza Roheim, Ph.D. With an Introduction by M. D. Eder. London: George Allen & Unwin, Ltd., 1925. Pp. 487.

MEDERN VIEWS ON THE TOXEMIAS OF PREGNANCY. By O. L. V. de Wesselow. M.B., F.R.C.P., and J. M. Wyatt, M.B., F.R.C.P. Modern Medical Monographs, Edited by Hugh Maclean, M.D., D.Sc. New York: Paul B. Hoeber, Inc., 1925. Pp. 99.

FREE NEGRO HEADS OF FAMILIES IN THE UNITED STATES IN 1830. Together with a Brief Treatment of the Free Negro. By Carter G. Woodson, Ph.D. Washington, D. C.: Association for Study of Negro Life and History, Inc., 1925. Pp. 296.

REPRODUCTION IN THE RABBIT. By John Hammond, M.A. With Foreword and Chapter on the Formation of the Corpus Luteum. By F. H. A. Marshall, F.R.S. Biological Monographs and Manuals, IV. Edinburgh and London: Oliver and Boyd, 1925. Pp. 210.

EARS AND THE MAN. Studies in Social Work for the Deafened. By Annetta W. Peck, Estelle E. Samuelson, and Ann Lehman. Of the New York League for the Hard of Hearing. With an Introduction by Wendell C. Phillips, M.D. Philadelphia: F. A. Davis Company, 1926. Pp. 217.

FREE NEGRO OWNERS OF SLAVES IN THE UNITED STATES IN 1830. Together with Absentee Ownership of Slaves in the United States in 1830. Compiled under the Direction of and Edited by Carter G. Woodson. Washington, D. C.: Association for Study of Negro Life and History, Inc., 1925. Pp. 78.

MODERN MEDICINE. Its Theory and Practice. Edited by Sir William Osler, Bart., M.D., F.R.S. Third Edition. Thoroughly Revised, Reedited by Thomas McCrae, M.D., Assisted by Elmer H. Funk, M.D. Volume II, Diseases of Doubtful Etiology, Diseases Caused by Protozoa, Spirochetes, and Animal Parasites, Diseases due to Physical, Chemical and Organic Agents, Deficiency Diseases. Illustrated. Philadelphia and New York: Lea & Febiger, 1925. Pp. 891.

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M-425 **Richmond, Virginia, U. S. A.**

Miscellany.

The Revolution Neurosis (Pregnant Women and the Scaffold).—*The Revolution Neurosis,* which Dr. Cabanès and Dr. L. Nass published several years ago, for which Jules Claretie wrote a curious preface in which one can guess his embarrassment in praising without restriction this interesting research into the troubles of the revolutionary movement, has been for some time out of print. Now a new edition, revised and considerably enlarged, is available. It will give an opportunity to those who do not yet know it of reading this work consecrated to the psychopathological crisis that attended the revolution of '89 and which explains in part the terrible deeds that our ancestors witnessed, even the sinister nature of Fouquier-Tinville, who sent to the scaffold pregnant women just as a butcher slaughters a cow with calf to "destroy the species." "If a woman condemned to death declares herself pregnant," says a criminal edict of 1670, "she may suffer her punishment after deliverance." The Revolution granted this same privilege. But the Terror disavowed these principles of humanity and justice, and the guillotine made no difference between the woman and the child, between the maiden and the future mother; all were equal under the axe. It was to the Hospice de l'Evêché, a sort of infirmary prison, that were generally sent women held in the various prisons of Paris who declared themselves pregnant. There the physicians of the hospice, assisted by a midwife, citizeness Prioux, drew up a report based on their visits, which was submitted to the public attorney who pronounced the final verdict. If favorable this amounted only to a reprieve; after accouchement, execution was decreed. But usually Fouquier-Tinville paid no attention to these reports of the doctors. This was one of the principal accusations against Fouquier when he appeared before the revolutionary tribunal—that he sent to the scaffold women who were declared to be pregnant and upon whom the physicians had pronounced their decissions. Many women, in the hope of obtaining a reprieve, declared themselves about to become mothers in the hope of prolonging their lives for a single day.—*Translated from Æsculape.*

Body Health and Physiognomy.—Dr. Löwenstein, of Hanover, recently demonstrated, by the aid of portraits and diagrams, the connection between body build and physiognomy. In the study of abnormal mental manifestations, psychiatrists no longer confine themselves to observation of the brain and skull formation, but study the form and structure of the whole body and the face which may give important information. Kretschmer, of Tübingen, has distinguished three different types of body build, 1, the slender, with small head, slender neck and sunken chest; 2, the athletes, with broad chest and great muscular development, and 3, the thickset, with compact body build, short legs, protruding paunch, head thrown forward, a rounded back and usually a heavy beard. The two former have, more or less, the same temperament, and if affected by mental disease, the intellectual centres are attacked. In the third group only periodical depression occurs, and the intellectual centres are not affected. A temperamental character is to be observed even in subjects who are mentally sound. Those of the two former groups seek retirement, their actions are usually characterized by pronounced egoism, by reason of which their own personality becomes the centre of every interest. They include the great systematic thinkers. The third group are not given to systematic logical thinking, and possess a vein of humor; they give evidence of an altruistic character. Kretschmer appears to have made his deductions from the male sex alone, but English observers have found the body build of females is the truer index to types of temperament.—*Medical Press and Circular,* January 13, 1926.

Impressions of Ophthalmological Activities Abroad.—John E. Weeks describes in *Northwest Medicine* for February, 1925, the operations for cataract watched in France, Switzerland, Spain, Egypt, Ceylon, India, Burmah, Siam, China, and Japan, and concludes with the following remarks:

The variations in technic adopted by various able men illustrate the individual variation in adaptability. There are probably no two operators whose technic is exactly the same. Because of these facts we should be slow to denounce the claims of any able man regarding the good results obtained by any form of technic that he may employ. There is one point in the technic that is now very generally adopted, namely, in regard to the site of the incision. By far the greater number of surgeons make the incision for the removal of cataract in vascular tissue at or just back of its limbus. My experience has led me to believe that down growth of epithelium into the anterior chamber does not occur when the incision is made in vascular tissue.

Stammering and Stuttering from the Medical Viewpoint.—May Kirk Scripture and John A. Glassburg (*Archives of Pediatrics,* August, 1925) state that the treatment of speech disorders is primarily a medical problem and then an educational one. The best form of therapy is that under a medical speech specialist well versed in neuropsychiatry, psychology, rhinolaryngology and phonetics.

Many behavioristic attitudes are caused by speech disorders. Among them are mental retardation, feeblemindedness, inferiority complexes, shutin personalities, shyness, timidity, maladjustment, suicidal tendencies, emotional insanity, criminality and other antisocial characteristics.

Stuttering and stammering are distinct speech disorders. The former is difficult speech and the latter incorrect speech or mispronunciation. The cause of stuttering is subject to much controversy. The authors find it to be an underlying neuropathic predisposition and exciting cause which is in the nature of a nervous shock.

Stammering is for the most part a speech disorder due to a rhinolaryngological defect, which may be adenoids, abnormal length and thickness of the uvula, abnormal size and tumors of the tongue, hemiatrophy of the tongue, cleft palate, harelip, deformities of the jaws, improper development of the palatal arch, intranasal obstructions, tongue tie or defective hearing. The treatment in every case of stammering is, first, removal of the rhinolaryngological abnormality and then proper breathing exercises, correction of the bad speech habits, and phonetic reeducation.

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International Medical Stations for Sailors.—Norway has set up twenty-one medical stations for sailors of all nations in her seaport towns. The step is the first in a much wider scheme propounded by the Norwegian Red Cross to the General Council of the League of Red Cross Societies. If it is carried out all the seafaring members among the fifty or so nations represented on the council will follow Norway's example and linked Red Cross medical stations will be available for the sailor throughout all ports of the world. The advantage to him and to his fellows is obvious. He is notoriously careless of his health. If he seeks advice in port he falls as often as not into the hands of quacks and sharks. Frequently ailments which if recognized in time might be remedied go untended, to the patient's and to the general danger; and this in spite of the very great improvements that recent years have seen in the general conditions of life at sea. Mr. Masefield's plaint of the sailor racked with fever smacks no doubt of the bad old days, but who dare say the lines have no application now? "Now them there passengers," he said, "if they gets fever chills, there's buckets of quinine for them 'n' bulgin' crates o' pills, 'N' a doctor with Latin 'n' drugs 'n' all—enough to sink a town, 'N' they lies quiet in their blushin' bunks 'n' mops their gruel down. But there ain't none o' them fine ways for us poor sailor men." The lot of the tramp sailor, dependent on the stock medicine chest and the captain's skill in using it, is no great advance on this even yet; and a plan which would ensure him the best advice and continuous treatment from port to port at a small fee—for there is very properly no suggestion that the plan should be charitable—deserves that serious consideration of the maritime members of the Red Cross for which Dr. Harald Engelsen, who pioneered the Norwegian plan, pleads in the current number of the *World's Health.—Manchester Guardian Weekly.*

Leprosy in India.—A report of the year's work in India of the Mission to Lepers shows that not only is the relief of those afflicted with this disease still left to charity without State assistance, but that the Indian Mission is supported in far the greater part by private subscriptions from other countries, says the *Medical Press and Circular* January 13, 1926. Barely one sixth of these are contributed in India. Besides the care of those disabled by leprosy and the deformities resulting from it, the Mission undertakes the charge of the untainted children of those so suffering. From the findings of a medical subcommittee which met in 1924, at Allahabad, it is evident that leprosy can eventually be eliminated; for it has been proved that, in its early stages, it is not infectious and is highly amenable to treatment. It is not congenital, but infancy is the period during which it is most likely to be contracted; and as the disease progresses it may become so dangerously infective as to make segregation imperative. It is well that these facts should be widely known, so that patients, recognizing the first signs and symptoms of the disease, may be encouraged to report themselves and undergo the necessary treatment. The success of the measures recently adopted for the cure of leprosy calls for the assistance of the State in devising and supporting measures for combating its spread and procuring its eventual eradication.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

PRESCRIPTION NOTES. By Arthur L. Tatum, M.D. Chicago: The University of Chicago Press, 1925.

MONTEFIORE HOSPITAL. For Chronic Diseases. Fortieth Annual Report, 1924. New York, 1925. Pp. 103.

MORALITY OF BIRTH CONTROL. By Ettie A. Rout. London: John Lane, The Bodley Head, Limited, 1925. Pp. 224.

MEDICAL FORMULARY. By E. Quin Thornton, M.D. Twelfth Edition, revised. Philadelphia and New York: Lea & Febiger, 1925. Pp. 352.

LEBENSGESCHEHEN UND KRANKHEIT. Von Dr. Carl Haeberlin. Mit einem Geleitwort von Prof. Dr. Hans Much. Leipzig: Curt Kabitzsch, 1926. Pp. 144.

THE JESUIT MARTYRS OF NORTH AMERICA. By John J. Wynne, S.J. New York: Universal Knowledge Foundation, 1925. Pp. 246.

BELLEVUE AND ALLIED HOSPITALS, City of New York. Twenty-second Annual Report, January 1, 1923 to December 31, 1923. New York, 1925. Pp. 105.

SURGEON GENERAL, U. S. NAVY, Annual Report, 1925. Navy Department, Bureau of Medicine and Surgery. Washington: Government Printing Office, 1925. Pp. 283.

POSTMORTEM APPEARANCES. By Joan M. Ross, M.B., M.R.C.S. With Preface by E. H. Kettle, M.D. Oxford Medical Publications. London and New York: Humphrey Milford, Oxford University Press, 1925. Pp. 216.

THERAPY OF PUERPERAL FEVER. By Privatdozent Dr. Robert Koehler. American Edition, prepared by Hugo Ehrenfest, M.D., F.A.C.S. With Twenty-seven Illustrations. St. Louis: The C. V. Mosby Company, 1925. Pp. 276.

HEALTH THROUGH PREVENTION AND CONTROL OF DISEASES. By Thomas D. Wood, M.D., and Hugh Grant Rowell, M.D. Yonkers and Chicago: World Book Company, 1925. Pp. 122.

ASSOCIATION OF LIFE INSURANCE PRESIDENTS. Proceedings of the Nineteenth Annual Meeting, New York, December 3 and 4, 1925. Pp. 203.

HIGH FREQUENCY PRACTICE. For Practitioners and Students. By Burton Baker Grover, M.D. Fourth Edition, Illustrated with Engravings, Thoroughly Revised and Rewritten. Kansas City: The Electron Press, 1925. Pp. 555.

ABDOMINAL OPERATIONS. By Sir Berkeley Moynihan, K.G.M.G., Fourth Edition, Entirely Reset and Enlarged. Two Volumes, with 470 illustrations, ten in colors. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 1217.

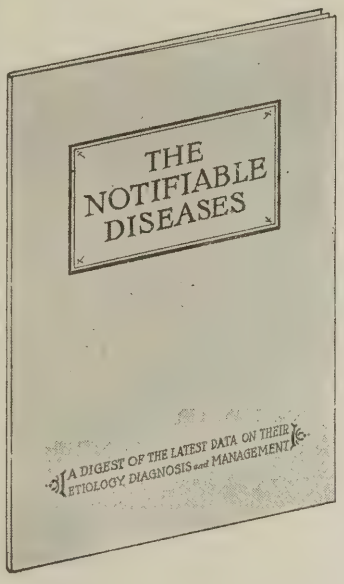
FRÜHDIAGNOSE DER LUNGENTUBERKULOSE. Unter gleichzeitiger Berücksichtigung der Drüsen-und Lungensymptome. Von Dr. Hanns Alexander. 3, verbesserte Auflage, mit 3 Abbildungen im Text und 1 Tafel. Leipzig: Curt Kabitzsch, 1925. Pp. 40.

MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume XV, Statistics, Part II, Medical and Casualty Statistics. Prepared under the Direction of Maj. Gen. M. W. Ireland, by Mar. Albert G. Love, M.C., U. S. Army. Washington: Government Printing Office, 1925. Pp. 1368.

DIE LICHTBEHANDLUNG (Heliotherapie) in den deutschen Lungenheilanstalten. Denkschrift auf Veraulassung der vereingung der Lungenheilanstalts-Aerzte, Bearbeitet von San.-Rat Dr. George Liebe. 3, Neubearbeitete Auflage von Dr. Hans H. Meiners. Leipzig: Curt Kabitzsch, 1926. Pp. 44.

DIAGNOSTISCHE UND THERAPEUTISCHE IRRTÜMER UND DEREN VERHUTUNG. Chirurgie. Herausgegeben von Prof. Dr. J. Schwalbe. Siebentes Heft, Verletzungen und chirurgische Krankheiten der Mund-und Rachenhöhle, des Halses, etc. Von Prof. Dr. Paul Clairmont. Mit 97 Textabbildungen. Leipzig: Georg Thieme, 1926. Pp. 188.

The Notifiable Diseases



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M-431

Miscellany.

British Scientists Plan Science News Service.—A British *Science Service* is now being planned by a committee of scientists appointed by a conference of representatives of leading British scientific and technical organizations. The British Association for the Advancement of Science and the British Science Guild joined in calling the conference to consider the advisability of establishing a news service to popularize science for the English newspapers and their readers. Resolutions were adopted approving the idea and the committee now at work was asked to recommend methods and organization. Sir Richard Gregory, editor of *Nature,* the leading scientific magazine of England, is chairman of the committee.

Encouraged by the success of *Science Service* in America, those sponsoring the project feel convinced that there is a place in British science and journalism for a similar organization to furnish authentic, yet interesting scientific news to the press. They realize, however, that there are problems peculiar to English journalism that must be met.

The organizing committee has been assured of the close cooperation of the American *Science Service,* now five years old, but the American organization, while cooperating and exchanging news, will have no financial interest in the new British organization. The movement for a British *Science Service* was inaugurated at a luncheon tendered by American *Science Service* to leading scientists at the Southampton meeting of the British Association for the Advancement of Science last August.—*Science Service.*

The Early History of Aeronautics.—At a meeting of the Royal Society of Medicine held on February 1st, Dr. F. J. Poynton gave an address on the Part Taken by Doctors in the Early Days of Aeronautics. He traced men's intereset in aerial flight back to the earliest recorded times. In the *Book of the Dead,* he pointed out, the spirits were shown winged, and there were many stories of men aspiring to the sky drawn by eagles or with wings. The earliest illustration was found in a wood cut of Dædalus and Icarus, published in 1493. Turning to the particular history of the lighter than air machine, the lecturer drew attention to the many celebrated names associated with it. Roger Bacon, Montanus, Leonardo da Vinci, Robert Hook, Cavarro, Swedenborg, Lavoisier, and Priestley had all been bitten by the craze, but, as so often happened, the solution of the problem came from an unexpected source. In 1782 the two brothers Montgolfier first saw a paper sphere filled with heated air float to the ceiling of their room. They gave their first public demonstration in the following year, when a sphere with a capacity of sixty-five cubic feet was successfully floated with heated air. The importance of their success was realized at once. Two and a half months later hydrogen was first used by Mr. Charles to inflate a balloon of such dimensions that 1125 pounds of iron and 560 pounds of sulphuric acid were required to supply it. Fierce controversy ensued as to which of the two methods was the better.

Later, in 1783, a cage balloon carrying a sheep, a duck, and a cock were sent up in the presence of the King, the Queen (Marie Antoinette), and a large and distinguished crowd. Among them were Marat, who was much interested in aeronautcis; Mr. Charles, who was afterwards saved from the guillotine by his eloquent address to the crowd, in which he recalled his aerial experiments and the popular enthusiasm they aroused; and the famous de Rozier, who began life as a medical student at Metz, but turned to science to escape the ordeal of anatomy. He became director of the first science museum in Paris, and in 1783 made an aerial journey across Paris. Benjamin Franklin was the link between these Parisian ventures and England, through his correspondence with Sir Joseph Banks, in the course of which he wrote: "Your philosophy seems to be too bashful; in this country we are not so ashamed of being laughed at." But it was not long before the "balloon madness" of Paris, with its caricatures, toy balloons, stamped handkerchiefs, and even garters, spread to London, and in September, 1783, a balloon was sent up from the Artillery Ground. On February 2, 1784, a five foot balloon let free at Sandwich floated across to Flanders, and was the first to cross the Channel. In Scotland the versatile and ill fated Dr. Tytler made an ascent in a hot air balloon on August 25th, but returned to earth with some precipitancy. His later attempts failed. In 1784 the Italian Lunardi arrived in London with letters of introduction to Banks and others, and in September made an ascent in a gas balloon which was filled for the occasion by Dr. George Fordyce, of St. Thomas's Hospital. Among the spectators on that occasion were Mr. John Sheldon, F.R.S., of Paris, surgeon to the Westminster Infirmary; Dr. Jeffries, a Boston physician practising in London; and the Frenchman, Blanchard. These three were the pioneers of early English attempts to fly. The first woman to make an aerial journey was Lunardi's friend, Mrs. Sage. On both sides of the Channel feverish preparations were being made to cross the water, and after several difficulties Blanchard and Jeffries succeeded in doing so on January 7, 1785, after a journey of two hours and forty-seven minutes. De Rozier's effort from Boulogne resulted in the balloon crashing on French soil and killing both him and his companion, de Romain.—*Lancet,* February 6, 1926.

Women Flyers.—In the opinion of Major Oliver Stewart the medical tests, which are being carried out by the Air Ministry to ascertain if women are physically and temperamentally fit to fly, are unnecessary. He asserts categorically that women are not fit to pilot passenger carrying aeroplanes, and the reason he gives will surprise many. It is that they are much too fearless: "The fearless pilot is almost invariably a bad pilot. Fear is the best of flying instructors, for it teaches its pupils what not to do, and it warns them in a memorable manner what will happen if they disobey. Women are without this instructor; they do not know physical fear. The typical Englishwoman, who is sufficiently courageous to play furious football, and hic, hac, hockey, to fight for 'buses, to wear 'sensible' clothes in Paris, this woman, I say, should not be allowed with a blunt penknife in her hand, much less with the control stick of an aeroplane."—*Medical Press and Circular,* March 24, 1926.

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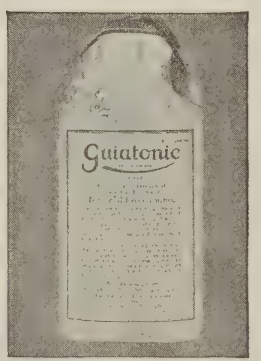

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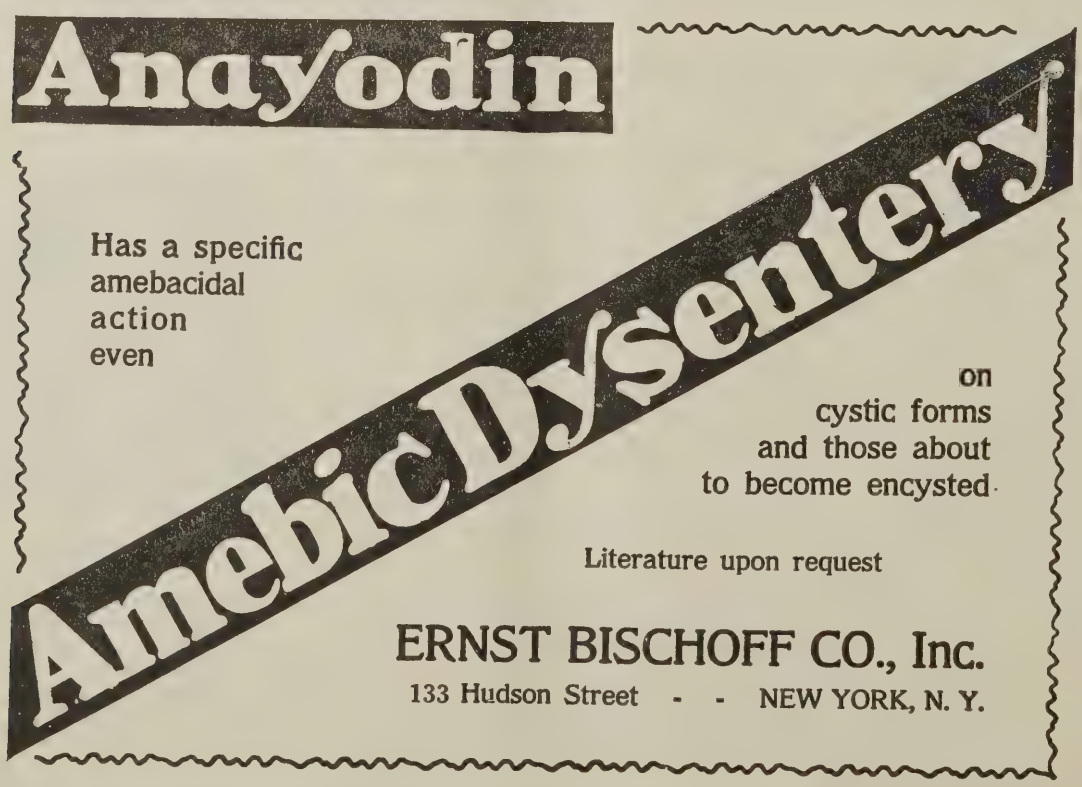
Medical Practice in China.—The status of qualified medical men in China, whether missionaries or otherwise, is likely to be very uncertain if the rights which they have enjoyed as foreigners should be abolished, says the *Lancet* for February 6, 1926. At present no protection is afforded them comparable to that which the profession has in England, America, and elsewhere. If a doctor in China has no status from a treaty he may be sued in a Chinese court and have to meet very heavy claims for damages, as was illustrated quite recently when a German doctor lost a patient after an operation and had to pay $3000 damages. The Chinese custom of paying the doctor as long as the family is in health need not complicate the situation, for after all it is but an illustration of contract practice, but the immediate difficulty is that there is no sort of medical registration. People with the most rudimentary knowledge —embryonic medical students or even hospital coolies —frequently set up in practice on their own, and such organizations as the China Medical Association and the China Medical Missionary Association are quite unable to control the unqualified practitioners. If no protection for medical men is arranged at the Extra-Territorial Conference their work in the future will be carried on with great risk and difficulty. If failure leads to financial disaster it may be supposed that only simple cases will be undertaken. There is little reason to think, however, that the Chinese Government would not welcome, in the interests of the medical profession among its own nationals, the setting up of a register of properly qualified medical men. Perhaps the plan followed by the Japanese when they took over Korea may be adopted. At first they had to recognize the existing native practitioners and doctors holding British degrees (these are still recognized). Only a five years' recognition within a limited area was granted to a large number of American doctors, but after the matter had been taken up diplomatically those who were already at work in Korea were given full permission to practice. Since then every newcomer from America has had to take a Japanese medical examination, and though an elaborate system of certificates and reports has been instituted, the net result, it is said, has been to the advantage of medical standards.

New Zealand and Endemic Goitre.—Since New Zealand has no inhabited locality more than a hundred miles from the sea, immunity from goitre might be expected; but an exhaustive study by Hercus, Benson and Carter, of the University of Otago, has disclosed a widespread prevalence. Thirty-one per cent. of school children are affected, and in some areas as many as sixty per cent. show thyroid enlargement. The Maoris are by no means immune. The incidence of goitre is generally in inverse proportion to the amount of iodine in the soil, and thus to the amount contained in the food supply of the population. In some districts, however, the iodine appears to be derived from the drinking water rather than the food. Statistics show that of the male conscripts between twenty and forty-five years of age examined by military medical boards during the war, almost one per cent. was declared unfit for active service on account of thyroid enlargement.—*Medical Press and Circular,* April 21, 1926.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Literature on Request

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Noise and Fatigue.—Eliminate noise and eliminate fatigue could well be the slogan of practically all human activities, says *Nation's Health* for March, 1926. Industry, the city, the home, all contribute their quota to the overproduction of these harmful and useless accessories of present day civilization. Primitive people are quiet people, and indulge in noise and noise making only on special occasions when it is desired to arouse to some unusual pitch the emotions of the clan.

Physiologists agree that noise is fatiguing, although there seems to be a socalled aural tolerance which is acquired, but not to the same extent, by all persons. Irreparable deafness results from too long exposure to certain noises, as is seen in boilermakers and others following similar occupations. The relation between noise and industrial fatigue has been studied sufficiently to determine that one has a direct bearing upon the other.

While the average person can adjust his nervous system to many noises without apparent harm, the more subtle effects cannot be measured. Inability to concentrate the mind, to plan activities, to meet sudden mental emergencies is often noted in a noisy environment. The effect of noise in retarding recovery from illness has long been recognized, but measures for its control have not been so effectively put into play. Reduction in noise both within and without the hospital by means of noiseless flooring and street paving will do much to make the life of the patient more bearable and comfortable.

Noises in and near schools are distracting and interfere with studies. The double strain of noise and study is harmful to the growing child and doubtless lays the foundation for disorders of the nervous system later in life.

Research has enabled engineers to choose effective sound absorbing materials to prevent the passage of sound and satisfactory acoustical correction installations to reduce the reverberation of sound within rooms. While the use of such materials may involve an increased construction expense, this will be offset by favorable returns in many other ways.

Noise is a public health problem of no mean proportions, and it merits the careful consideration of health officers in their programs of health betterment. It is physiologically, economically, and socially desirable to reduce it to the lowest possible minimum.

Yellowstone Park Has New Hot Spring.—A new hot spring has broken out at Mammoth Hot Springs, where the park headquarters are situated, according to a report from Park Naturalist E. J. Sawyer. The new jet comes through a vent about two inches long and three quarters of an inch across, and is depositing travertine limestone over an area varying from twenty-five to thirty-five feet in diameter. It is located in the lower part of the great group of limestone terraces, near the rocky cone known as Liberty Cap. Due to the soft and crumbling nature of the limestone in the Mammoth Hot Springs formation, there is a good deal of shifting about in the location of the springs in this place, but there has been no activity in this particular section of the formation for twenty years or more.—*Science Service.*

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

CRAIG COLONY. State of New York. Thirty Second Annual Report. New York, 1926. Pp. 51.

DISEASE PREVENTION. By Herbert H. Waite, M.D., New York: Thomas Y. Crowell Company, 1926. Pp. 667.

DEPARTMENT OF HEALTH, STATE OF NEW JERSEY, Forty-eighth Annual Report, 1925. Trenton: 1925. Pp. 280.

VISUAL FIELD STUDIES. By Ralph I. Lloyd, M.D., F.A.C.S. New York: The Technical Press, 1926. Pp. 216.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY, Annual Report for Year 1925. New York, 1925. Pp. 34.

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Miscellany.

Building Insulation and Health.—Winter months are shutin months and with the great range in climatic conditions to which the average person is subjected—from the tropical dry heat of many buildings to zero temperature out of doors—a terrific strain is placed upon the body heat regulating mechanism. The increase of respiratory diseases is more or less directly connected with this situation.

Another important cause of ill health, particularly in rural schools and similar buildings, is the great variation in temperature within a given room. While those near the heat source—usually a stove—are too warm, those in other parts of the room are in an atmosphere many degrees colder. Such situations can be greatly improved by the application of a little knowledge of physics at the time of construction, or in buildings already in use. By the utilization of proper insulating materials, heat can be conserved and more evenly distributed, and cold can be excluded. The old frame schoolhouse in which the children either roasted or froze, depending on their location in the room, should give way to the modern building with heat properly conserved and distributed.

Of major interest, if not of equal importance, is the provision for exclusion of summer heat, particularly in sleeping and resting quarters. In poorly constructed buildings such rooms reach a high temperature during the day which is not reduced at night as much as is the surrounding oudtdoor temperature. This condition makes for restless sleep with its lack of recuperation. Heat can be excluded as well as conserved, proper building construction serving both purposes.

By the prevention of minor colds prolonged illnesses of a more serious character are prevented. Proper environment for rest is equally essential. Health education in the schools cannot bring the desired results unless, by example, the pupils are taught something about proper heating and ventilation. These are problems with which the health officer should concern himself, for they have a direct bearing on the health and comfort of large numbers of people.—*Nation's Health.*

School Rooms Badly Lighted.—The lighting of school rooms in the United States, especially the provision made for artificial lighting, is far below the standards considered economical by up to date business establishments, according to E. J. Dailey, Jr., illumination expert of New York, who attended the National Education Association meeting. "Wisconsin is one of the very few states that has a lighting code controlling the standard of lighting for school buildings," said Mr. Dailey. "If more states would enact a similar code many of the present evils would be eliminated. Investigations have shown that healthy eyes, under normal conditions, use up from 10 to 15 per cent. of the whole nerve force generated by the body, but the eyes may use up as much as 50 per cent. of this force if subjected to undue strain. Other studies have shown that at least one fourth of our school children have defective vision, and much of the trouble can be traced to improper lighting either in the school or in the home."—*Science Serivce.*

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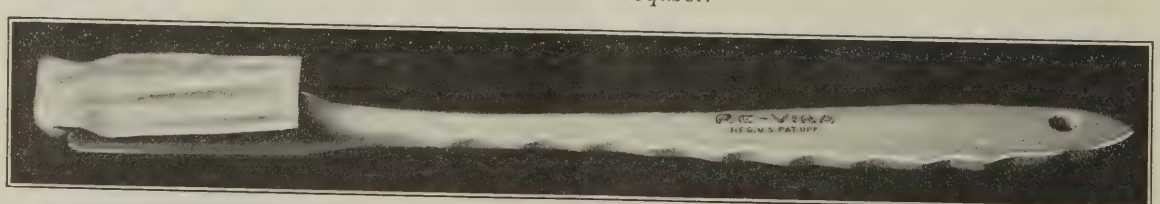

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The American Journal of Obstetrics and Gynecology, July 1925, Article by Dr. Julius Jarcho, of New York City.

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The Evolution of Man's Brain.—Much the most remarkable instance in the biological world of steady development in one direction has been the evolution of the human cortex cerebri from the earliest mammalian phase of Man's ancestry. This evolution, which has occupied several millions of years, has been in one definite direction—that of increasing intelligence. Here we have an instance—a supreme instance—of apparent orthogenesis—the tendency of an organ to vary progressively in a definite direction. When, however, we come to examine into the circumstances under which this evolution has taken place, we find no evidence of an innate tendency to mental advance. All evidence points to the conclusion that Man's mental evolution has been effected by changing conditions of life of a kind calculated to confer survival value on intelligence above the mean of the species.

The fact that the extant anthropoids have remained on much the same level of intelligence during the period of the evolving man has nearly, if not quite, trebled his cerebral cortex, conclusively shows that cerebral evolution is not the outcome of innate tendency.

The abandonment of forestrial life for the life of the hunter greatly increased the survival value of superaverage intelligence, and it was this change in the conditions of life which enabled the evolving man to outdistance his competitors in the race for mental supremacy.—*Medical Press and Circular*, March 3, 1926.

Five Greatest Contributors to Medical Progress.—In response to an invitation by the *Medical Press and Circular* for the comments and criticism of its readers, that journal received and published letters from several representative authorities on the history of medicine in England. Had any replies come from foreign countries we should have been prepared to find that they revealed further diversity of opinion: for there can be no doubt that the literature and teaching of each nation is imbued with some degree of bias, similar to that discovered in the answers of the American students. The five names suggested by the *Medical Press and Circular* were accepted with slight difference by most of the correspondents; and the selection of those who limited themselves to five names show the following result:—Harvey ten, Hippocrates nine, Sydenham eight, Pasteur eight, John Hunter five, Galen three, Vesalius two, and Celsus, Leonardo da Vinci, Morgagni, Laënnec and Lister one each. In some instances there was doubt between Sydenham and Laënnec, and between Sydenham and Boerhaäve; and in others between Lister and Hunter, and Lister and Pasteur.

In the matter of Galen the plea is made that, of the earliest contributors, he alone is known to us personally, and that the legendary character of Hippocrates suffices to give Galen the preference. From this aspect the selection may be justified, but the substitution does not appeal to us. "Pass the name of Galen," says one correspondent. "Was not his system the whole science and art of medicine for well nigh fifteen centuries? Were not his utterances as the words of Holy Writ? Was not his the textbook of medicine until the seventeenth century?" Granted that it was not his fault that the standard he had set was not surpassed by many subsequent generations: but it cannot be denied that those generations were enveloped in a darkness which was only illumined by the renaissance of medicine initiated in the sixteenth and completed in the seventeenth century by Harvey's discovery, which prepared the way for the work of Glisson and Sydenham and the further discoveries of Pecquet, Rudbeck, and Mayow. Medieval darkness alone enabled the Galenic system to uphold its supremacy so long.

By some John Hunter was omitted from the "Big Five"; but the journal remained firm in its choice. The contributions of John Hunter to the progress of medical science and medical research are still inadequately understood by the majority. "John Hunter formed the superb conception of merging into one both classes of ideas—the normal and the abnormal in nature—by showing that nothing is irregular, nothing perturbed, nothing disobedient. Centuries perhaps may elapse before that conception will be consummated. But what Hunter effected towards it places him at the head of all pathologists, ancient or modern. For with him the science of pathology did not mean the laws of disease in man alone, or even in all animals, or even in the whole organic kingdom; but it meant the laws of disease and of malformation in the entire material world, organic and inorganic. His great idea was to raise a science of the abnormal." Of those who are able to realize what pathology was when he found it and what it was when he left it, there will be few to deny that John Hunter revolutionized medical thought and the medical outlook more than anyone, with the exceptions of Harvey and Pasteur. Upon the shoulders of these three men, to borrow a well turned phrase, stands modern medical science.

Women's Fingers Work Faster Than Men's.—A method of measuring the speed in an individual's fingers has been devised. The test has been applied to 1,021 women applying for work in the shops of an electrical company and the results are described in a recent issue of the *Journal of Personnel Research* by Mildred Hines and Johnson O'Connor. The equipment used by the experimenters consisted of nothing more than three hundred brass pins and a flat metal plate in which one hundred holes were drilled part way through. Candidates for work requiring agile fingers are asked to pick the pins from a tray in which they are piled loosely and to place three pins in each drilled hole in the plate as rapidly as possible. They are instructed to try to pick up the pins three at a time in order to make maximum speed. Individuals vary widely in this test. The fastest finish in less than six minutes and the slowest require from twelve to fifteen minutes. Since the inauguration of this test seventy-seven new women workers have been assigned to the fine meter or instrument work requiring finger dexterity. Subsequent records show that more than eighty-five per cent. of these women are successful in the work. The test also showed that women are much better adapted for this work than are men. The test is said to eliminate much of the guess work and personal equation factor in the hiring of workers for this type of work.—*Science Service.*

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Jour. of Urology. Aug., 1925. Vol. XIV, No. 2.

Jour. of Urology, Dec., 1924, Vol. XII, No. 6.

The Canadian Med. Assoc. Jour. 1925, Vol. XV, p. p. 787-788.

Jour. A. M. A., Dec. 12th, 1925. Vol. 85, No. 24, p. p. 1855-1861.

LITERATURE SENT UPON REQUEST

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Ethics in Advertising.—A single issue of a prominent and reputable Boston newspaper was recently found by the *Boston Medical and Surgical Journal* to contain the following advertisements:

1. A pill that cures constipation, biliousness, belching and acid risings in the mouth. 2. An application that relieves lumbago, neuritis, sciatica, colds and every ache and pain. 3. A preventive of tonsillitis that kills germs without injury to the delicate throat membrane. 4. An external remedy that relieves colds without dosing. 5. An ointment that positively stops any case of itching, blind, bleeding or protruding piles. 6. A headache cure. 7. An internal remedy to reduce fat. 8. A chewing gum that safely takes off fat at the rate of several pounds a week. 9. Bitters that make rich blood. 10. Pleasand little tablets that are better than calomel. (No need to question this.) 11. A complete cure of rupture without operation, after trusses had failed. 12. A safe and proven remedy for colds, grip or influenza. 13. Another fat reducing gum.

The *Journal* comments as follows: "It is not through the substances themselves that their greatest harm is done, however. The chief objection to all of them is that they furnish either symptomatic or psychic relief and may, and probably do, often act tragically to the disadvantage of their users by masking symptoms of grave disorders. A fire department that considered it its main duty to prevent the escape of smoke without hunting for the blaze would not long be countenanced in a really up to date community."

Indentured Children.—Indentured children in Wisconsin, one of the twelve states permitting such indenture, have been studied by the Children's Bureau at the request of Wisconsin authorities. The homes provided for a large proportion of the 827 children studied, who were indentured on written contracts by the State Public Scholo at Sparta, Wisconsin, under a law enacted in 1885, were in many cases actually detrimental to the children. Many of the children, the Bureau found, worked virtually as unpaid servants in households or on farms, often deprived of schooling and recreation and sometimes cruelly treated. Five hundred and forty indenture homes in many parts of the state were visited by the Children's Bureau investigators, who, after very careful and conservative weighing of the facts, judged forty-eight per cent. of the homes as actually detrimental to the children, forty-four per cent. as satisfactory, and only eight per cent. as high grade.

The children were usually committed because of neglect, abandonment, the poverty or the immorality of the parents, by county poor commissioners or judges, who were not equipped to investigate the cases or to apply measures for rehabilitating homes or for keeping the families together. When committed, the children were sent to the State Public School and were then indentured or placed out for adoption with little or no attempt to find the home that best met the needs of the child. Supervision after placement was inadequate, with only two agents to guard the welfare of the approximately five hundred children scattered throughout the state, so that the children might, and in some cases did, wait months or years for a chance to complain to the agent of cruelty or overwork.

The Children's Bureau study was completed, so far as the gathering of facts was concerned, in 1923. Wisconsin authorities have notified the Bureau that some improvements have been made. The law is still the same as in 1923, however, and, according to the director of the juvenile division of the state board of control, sufficient appropriations have not yet been made to supply an adequate staff at the State Public School. Recommendations of the Children's Bureau include abolition of indenture, a program for the prevention of child dependency and the breakup of homes, careful study of the individual child, and better investigation and supervision of homes in which children are placed.

Fewer People Die of "Old Age."—Forty years ago, almost five thousand deaths in New York State were attributed to "old age." Last year the number of deaths so classified was only 610, a decrease of almost ninety per cent. The number of deaths from all causes increased seventy-five per cent. in this period. What is the reason for the astonishing decrease in mortality from "old age"? Most of these deaths fall in the age group "seventy years and over," although some deaths are attributed to senility at earlier ages, occasionally even in early middle life. The population of the State has doubled and the number of old people has more than doubled since 1885. The decrease in the number of deaths from old age is, therefore, not due to a shrinking in the contingent of the population from which these deaths are drawn. The reason for this change lies in the more careful and scientific diagnosis of the cause of death. Where forty years ago, the death of an old person, because of indifferent reporting or for want of knowledge, was often attributed simply to the effects of old age, now an effort is made to establish a definite diagnosis in every case. The progressive reduction in deaths under this head marks the growing skill and attention on the part of the practicing physicians of the State.

Stale Chlorinated Lime Ineffective as Germicide.—Chlorinated lime, also known as bleaching powder, and sometimes incorrectly called chloride of lime, a substance used extensively as a germicide, deodorant, and bleaching agent, loses its strength with age, eventually becoming ineffective as a germicide, says the United States Department of Agriculture. An investigation has been made by the department for the purpose of determining the rate of deterioration of chlorinated lime, and the results of the study have been published in Department Bulletin 1389, entitled Deterioration of Commercially Packed Chlorinated Lime. The use of seriously deteriorated chlorinated lime for germicidal purposes, not only is a waste of money, but by affording a false security causes other precautions to be omitted and serious injury to health may result.

The investigation disclosed no marked difference in rate of deterioration between samples manufactured and packed in winter and those put up in summer. There was, however, a seasonal variation, the loss of available chlorine being greater in warm than in cold weather. This loss seems to be slightly accelerated by light.

In recommending an infant food —consider its nutritive value first

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An International Congress on Tuberculosis.—An international tuberculosis congress is being arranged by the National Tuberculosis Association to be held in Washington, D. C., October 4-7, immediately after the meeting of the International Union Against Tuberculosis, which meets in the same city, September 30th to October 2d. Among distinguished men and women who have promised to be in attendance and who will address the various sessions are Sir Robert Philip, founder of the famous dispensary system of Edinburgh; Col. S. Lyle Cummins of Cardiff, Wales, director of the King Edward VII Research Foundation for Tuberculosis; Dr. G. B. Roatta of the Tuberculosis Dispensary of Florence, Italy; Prof. Gaetano Ronzoni, professor of medicine at the University of Milan; Dr. Vittorio Ascoli, professor of medicine at Rome; Dr. Léon Bernard of Paris, professor of hygiene and secretary of the French National Tuberculosis Association; Dr. Edouard Rist of Paris, physician to the Laennec Hospital; Dr. Ferdinand Sauerbruch of Munich, a leading authority on surgery of the chest; Prof. Frederick Neufeld of Berlin, director of the Robert Koch Laboratories; Prof. Lydia Rabinowitch of Berlin, one of the leading bacteriologists of Germany; Dr. Ernst Loewenstein of Vienna, the famous bacteriologist; and Prof. Hans Christian Jacobaeus of Stockholm, well known surgeon of the chest. Among others who are expected to attend the meetings, are Dr. A. Rollier of Leysin, Switzerland, authority on heliotherapy; Dr. F. N. Kay Menzies of London, well known authority on colonies for cured cases of tuberculosis; and Sir George Newman, Minister of Health of Great Britain. Special arrangements will be made for interpreting papers in foreign languages, and all papers will be published in the transactions.

Department Issues Flood Warning.—The Division of Sanitation of the New York State Department of Health has called the attention of water boards and waterworks officials to the possible contamination of the public water supplies under their control from flood conditions, which may arise when the present accumulation of ice and snow melts.

The contamination of water supply streams during these flood periods is more serious than at seasons of low flow. At times of flood, surface wash carries into the streams filth from animal enclosures, privy vaults and cesspools which has been accumulating for a number of months. Under the influence of rapid stream flow such contamination is carried to the water supply intake comparatively quickly and, consequently, the danger of contamination of the water supply is correspondingly greater. In the case of supplies obtained from wells or springs, contamination may occur due to the unusual hydrostatic conditions of the ground water arising from flood conditions. Waterworks officials have therefore been urged to make every effort to minimize and prevent the contamination of their supplies by careful inspection of the watersheds and, if possible, by putting premises thereon in such sanitary condition as to preclude the entrance of infected material into the streams. They have also been advised to look over and place water purification plants in perfect condition in order that they may be ready to meet the extra burden during periods of turbid and possibly infected water.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

REPORT OF THE DEPARTMENT OF HEALTH OF MONTREAL, 1924. Dr. S. Boucher, D.P.H. Montreal, 1925. Pp. 165.

THE NORMAL MIND. By William H. Burnham, Ph.D. New York: D. Appleton and Company, 1925.

DISEASES OF INFANTS AND CHILDREN. By Henry Dwight Chapin, A.M., M.D., and Lawrence Thomas Royster, M.D. Fifth Revised Edition. New York: William Wood and Company, 1925. Pp. 633.

SURGICAL CLINICS OF NORTH AMERICA. Volume V, No. 5, St. Louis Number. Philadelphia and London: W. B. Saunders Company, 1925. Pp. 1143-1457.

THE FELLOWSHIP OF FAITHS. By Alfred W. Martin. Selections from the World's Great Religions. New York: Roland Publishing Company, 1925.

HANDBOOK FOR SENIOR NURSES AND MIDWIVES. By J. K. Watson, M.D., (Edin.) Oxford Medical Publications. New York: Oxford University Press, 1926. Pp. 554.

PHYSIOLOGICAL HEALING. A Historical and Clinical Study. By Pierre Janet. Translated from the French by Eden and Cedar Paul. In Two Volumes. New York: The Macmillan Company, 1925. Pp. 1265.

HIGH FREQUENCY PRACTICE. For Practitioners and Students. By Burton Baker Grover, M.D. Illustrated with Engravings, Thoroughly Revised and Rewritten. Fourth Edition. Kansas City: The Electron Press, 1925. Pp. 555.

AMERICAN ASSOCIATION OF GENITOURINARY SURGERY. Transactions, Vol. XVIII, 1925. Thirty-seventh Annual Meeting, Washington, D. C., May 4 and 5, 1925. Baltimore: Williams & Wilkins Company, 1925. Pp. 517.

IL CONGRESO NACIONAL DE MEDICINA DE SEVILLA, 1924. Memoria Recopilada Presentade por el Doctor Felipe Sicilia. Madrid, Imprenta de la Viuda de A. G. Izquierdo. Pp. 98.

TUMORS OOF THE COLON AND RECTUM. Their Pathology. Diagnosis and Treatment. By Jerome M. Lynch, M.D. and Joseph Felsen, M.D. Illustrated. New York: Paul B. Hoeber, 1925. Pp. 259.

TEXTBOOK OF PHARMACEUTICAL CHEMISTRY. By Arthur Owen Bentley, Ph.G. and John Edmund Driver, M.Sc. (Lond.) A. I. C. Oxford Medical Publications, New York: Oxford University Press, 1926. Pp. 456.

THE JOHNS HOPKINS HOSPITAL REPORTS. Volume XXII, Fasciculus I. Studies on Bacterial Endocarditis, by William S. Thayer. Baltimore: The Johns Hopkins Press, 1926. Pp. 185.

MODERN METHODS IN THE DIAGNOSIS AND TREATMENT OF PULMONARY TUBERCULOSIS. By R. C. Wingfield, M. B., M.R.C.P. Modern Medical Monographs, Edited by Hugh MacLean, M.D. New York: Paul B. Hoeber, Inc., 1925. Pp. 134.

CANCER MORTALITY AMONG INSURED WAGE EARNERS AND THEIR FAMILIES. The Experience of the Metropolitan Life Insurance Company, Industrial Department, 1911 to 1922. New York: Metropolitan Life Insurance Company, 1925. Pp. 104.

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DIRECTIONS. Dissolve one teaspoonful of the Preparation in three tablespoonfuls of cold or warm water; boiling water changes the character of the preparation

Tuberculosis

Robert Alfred Bindley, M. D., *Late Resident Medical Officer North London Hospital for Consumption:* "I used considerable quantities of VALENTINE'S MEAT-JUICE when Resident Medical Officer of the North London Hospital for Consumption, and consider it of great use in feeding up those who are in a wasted condition, and who suffer severely from digestive disturbances."

Pietro Borromeo, *Physician and Surgeon of the Hospitals of Rome, Italy:* "I have tried VALENTINE'S MEAT-JUICE in the Tuberculosis Division of the Hospital of the Holy Spirit, and have proved the great advantages that it renders for the nutrition of the Consumptive. Pleasant to the most fastidious taste of the sick, it does not irritate the stomach; but stimulates the peptogastric functions so as to improve notably the appetite, even in cases of continuous and high fever and of extreme loss of strength."

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Miscellany.

The Old Steam Baths of Finland.—The affection of the Finns for the old steam bath depends partly on the general belief that it is a Finnish institution, writes Dr. Sakari Palsi (*World's Health,* February 1926). But a strong and profound love for the baths existed ages before the Finnish national spirit was kindled. "We are not the sole inventors of the steam bath; we share this honor with other nations." With the Slavs the steam bath was known of old and the present day Russian also knows the art of steam bathing and enjoys it. At the time of Jermak and his fellow Cossacks, the steam bath was known even in distant Siberia, where the steam bathers were as enthusiastic as the Finnish. The Eskimos and the native Indians in America also had hot baths, closely resembling those in Finland.

The northern nations long ago found that the steam bath helped them to keep clean in a cold climate and under primitive housing conditions. Perhaps the intense heat of their baths was a reaction to the lack of climatic warmth. The method of bathing throughout the North includes a sudden change of temperature which the bathers induce by plunging from glowing warmth into cold water or snow. This is something which southern nations look upon with awe and wonder. Curiously enough an ancient Arabian traveller expressed his feelings about the bathing of the Finno-Ougrian Mordvines in Central Russia in almost the same words as a presentday American ethnographer his fear concerning the effects of hot steam and icy water on the skin of the Eskimos. "These doubts of other peoples appear rather amusing to the Finns who have lost their fear of the heat of the bath during childhood when the mother's firm and expert hand wielded the broom of fresh birch sprays and beat the taste for the steam bath into their little bodies. The effect of the cold water is best remembered from those times when, as children, we tried to sit in the bath house with the old and experienced bathers, and with skin burning and in a state of suffocation we sought to save ourselves by rushing into the sea, already covered with the first ice of autumn. If it was early in the spring, we found the first holes in the ice and felt the cold water like an electric massage stimulate our inflamed skin. The men coming from the hot steam of the bath are able to endure the cold, and many are like those heroes of a classic Finnish novel on peasant life, who, after the bath, ran naked for long distances through the cold winter night. It is only because of lack of training that the southern nations cannot understand that, for the people from the North, effective measures are necessary for the invigoration of their stiffened bodies and for the cheer of their somewhat melancholy souls."

Although as stated the steam bath is well known to several nations of the North, in some respects the Finns are entitled to claim it as principally belonging to them. By detailed study and subtle analysis, they, more than others, have come to understand this way of bathing, and had already at a primitive stage of civilization developed its effectiveness and variety. "Evidently," writes Dr. Palsi, "the bath meets the needs of our race. We have modestly accepted it in its simple outward appearance, but at the same time have grasped its inner spiritual possibilities. Because of our renowned slowness, we find time fully to enjoy all the good which the baths offer; we are patient enough to await the effects of the different degrees of heat, we are never afraid if the red hot oven suddenly spits with rage, and with our birch tree broom we aid the even distribution of the heat. Many typical qualities of the Finnish mentality have played their part in the final perfection of the Finnish steam bath. We may say, then, that even though the steam bath is not exclusively a Finnish institution, the Finns are quite particularly a steambathing people.

"So much with regard to our outward relations to the old bath. In addition, its influence on Finnish life in general must be remembered. In developing a national bath culture, only the ancient Romans and the present day Japanese are our equals, but it seems that the Finnish have adopted their daily life even more to their bath, thus emphasizing its importance. There are thousands of individuals still alive who have gone through important crises of their lives within the bath house. Not many years ago in the country the bath house was the birth place of the home. There, too, we were nursed in our illness, and there finally we died. There no longer exist many persons whose life is so intimately connected with the steam bath. On the contrary, some people nowadays do not think the old bath an essential in the preparation for the great feasts of the year. Nevertheless, those who are born in the country have forever felt its influence. The bath house seemed to us a kind of home sanctuary, where we were expected to keep very quiet and where we learnt to worship things outside and above everyday life. The evening chime on Saturday night was always heard in the bath house, and thus our religious devotion became connected with the mysterious awe we always felt in its precincts."

The First State Pharmacy Law.—South Carolina lays claim to being the first State in the Union to have a pharmacy law. In November of 1793 the Medical Society of South Carolina petitioned the General Assembly of that State that they might be incorporated, with censorial powers of examining into the abilities of those undertaking the different branches of medicine in the State, and of inspecting the qualities of the drugs vended by apothecaries throughout the same and to condemn such as were unfit for use and to punish persons vending medicines so condemned. But it was not until December, 1817, that an act licensing apothecaries was passed. The first apothecary's license granted upon examination of an applicant's qualifications was issued to Richard Johnson, of Charleston, May 1, 1818. The first national convention of apothecaries held in the United States met in New York, 1851, through which the next year met and organized in Philadelphia the National American Pharmaceutical Association. The action of the Legislature of South Carolina, at the instance of the Medical Society of South Carolina, in statutory provision for examination and licensing of pharmacists, antedates the organization of the American Pharmaceutical Association thirty-five years, and precedes the action of the Georgia Legislature by nine years.—*Letter of John Bennett, of the Charleston Museum, to the N. Y. Times.*

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Literature on Request

Schieffelin & Co.
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Water Cress and Medicine.—Water cress has for centuries past been held delectable as a salad plant. Its scientific name, *Nasturtium officiale,* is an indication of supposed medicinal virtues, but not until recently has a chemical basis been sought for the belief of old women that its ingestion would cure bleeding cracks in the hands, and that its dietary values cause foul ulcers to heal, severe anemias to improve, and enable the body to throw off even such serious maladies as cancer. The old herbals sustain the popular belief in the value of cress as a medicine. One of them makes this statement: "We have seen patients in deep declines cured by living almost entirely on the plant. Centuries before this Xenophon expressed his knowledge of the effect of water cress on metabolism in his advice to the Persians that if they desired to improve the bodily growth of their children, they should be fed on water cress.—*Nation's Health.*

Newer Nutritional Knowledge.—Fifteen years ago we gave little concern to the kind of food we ate. We were interested chiefly in the quantity of calories which came to the table and in the methods by which they were prepared for serving. Few bakers thought of their products in terms of their food value or the rôle they played in creating healthy children or energizing the men who did the world's work.

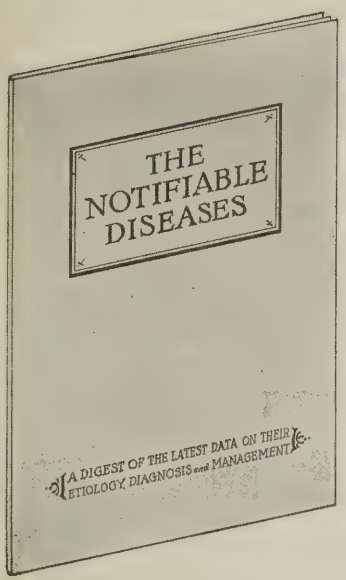
Today the situation is wholly changed. The baker has awakened to find himself recognized as a most important personage in the field of adequate nutrition. The American Institute of Baking has established a department of nutritional education which is devoted to assembling and sending out the important facts of nutrition. The biological method of studying food values has also come into prominence. The chemical laboratory almost over night was partitioned to make places for cages of small animals. Foods which until then had been tested chiefly in test tube and beaker were hereafter to be tried out on the living animal. During the last decade the life histories of many generations of rats, guineapigs, rabbits, and pigeons have yielded secrets which had been guessed but never before revealed. The changes in subject matter which this method of testing foods has introduced are no more important than the changes which have come in quieter periods of growth, but they are more dramatic in consequence. Long before 1910 there had been accumulated the great body of technical knowledge which is the foundation of nutrition subject matter today. During the present period, however, the study of protein has shifted from what was largely a quantitative study to a qualitative study, with the knowledge that proteins vary greatly in their building, repairing and maintaining values. Ten years ago mineral matter was given second place in any discussion of human nutrition needs. At the present time, it is never discussed as mineral matter, but in terms of its elements, calcium, phosphorus, iron, iodine and the others. The relationship of insufficient amounts of one or more of these elements to faulty nutrition is becoming a matter of common knowledge. The whole subject of the vitamines has been opened up, and three of these substances in foods or properties of foods have been widely discussed and definitely named. A possible fourth vitamine has recently been considered. The vitamine development represents the most spectacular occurrence in nutrition in the decade. Although the energy value of food and human energy needs had been well declared before this decade, there have been important additions to our knowledge of specific conditions affecting energy needs.

The changes both in content and method of courses in foods and nutrition in schools and colleges during the last decade have been directed toward giving students not only a knowledge of subject matter, but an enthusiasm for establishing food practices which will produce healthy human beings.—*Baking Technology.*

The Doctor's Bill.—There is nothing intimate or human about the modern physician's bill. The line "for professional services" is as cold and formal as a hospital ward and the amount may or may not be sufficient to cause the patient's relapse. By contrast the bills rendered by physicians a century or more ago had a human note in them. The physician was then more than a medical practitioner. He was the druggist and often the nurse. He administered the medicine that he prescribed. Sometimes he itemized his bill and thereby revealed the ailments to which flesh is the heir. The other day a visitor to Bermuda found a doctor's itemized bill in the library of the Historical Society of St. George's, the ancient capital of that colony. It was dated 1793 and was sent to a merchant of the town. One of the items—"to bleeding N. Daniel"—called for three shillings, fourpence. Daniel was apparently a negro slave. "Three vomits" cost six shillings and an equal amount covered three doses of rhubarb. Two shillings and eightpence was the price of a detergent, this being a cleansing medicine, and a similar charge was made for a "glass anodyne balsam," but six doses of fever powders cost six shillings. The physician was also the dentist. He charged three shillings and fourpence for extracting a tooth, and two shillings for the glass of laudanum that deadened the pain. The last item on his bill was "to visits and attendance"—one pound, four shillings.—*N. Y. Times.*

The Beginning of Syphilis in China.—In an address before the Conference on Hereditary Syphilis in Paris in October, 1925, published later in *Bruxelles Médical,* Prof. K. Dohi of Tokio presented some old Chinese books of the sixteenth century containing interesting details of the appearance of syphilis in China. The oldest of these books, entitled Shi-San-Yan, dates from 1522; it contains descriptions of five cases of syphilis with their symptoms, which are absolutely incontestable in at least three cases. This work is six years earlier than that of the Spanish physician, Diaz de Ysla, to which is attributed the earliest detailed description of syphilis in Europe. In a second book, Tsuk-i-Shut, the beginning of syphilis in China is clearly mentioned. The author, in the course of his description of a plant analogous to sarsaparilla, writes: "In the last years of the Hung-Chi period (1488-1505), there prevailed among the people a terrible eruption which spread first from Canton. The inhabitants of Wu did not yet know this malady and called it Kuang-Chuang, or Yeung-Mui-Chang." The latter is the name now for syphilis in China. It is derived from the name of a plant which presents certain analogies in color with syphilitic eruptions.—*Æsculape.*

The Notifiable Diseases



Their etiology, transmission, incubation period, diagnosis, duration, quarantine restrictions, and terminal disinfection.

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P. McDonnell, *M. B. Hon. Surgeon, Lowestoft and North Suffolk Hospital, Lowestoft, England:* "We have found VALENTINE'S MEAT-JUICE invaluable in cases of shock and collapse of men who have been blown up in their ships by mines and torpedoes. Some of the patients have been severely injured, often for hours before admission here, and VALENTINE'S MEAT-JUICE has been the only food they could retain."

Dr. E. Duloroy, *Physician Accoucher to the International Hospital, Paris, France:* "A young accouchée, in a very weak condition and suffering from stomach trouble, could retain no food, but was able to assimilate VALENTINE'S MEAT-JUICE given at first in small doses. An improvement was quickly visible, the patient recovered her strength and is to-day in good health."

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Miscellany.

Human Experiment Stations.—For fifty years and more experiment stations have developed and directed our agricultural activities. In their laboratories new fruits and grains have originated, scientific methods of fertilizing soils and cultivating crops have been worked out to increase production, and the breeding and feeding of animals have been developed so successfully that no modern farmer varies his plan of raising and maturing beef or dairy cattle, his sheep or hogs, from the methods devised by experts. There is no guess work in the rationing of well bred live stock. Every bushel of corn fed is expected to produce the maximum poundage in pork, and the ration of a dairy cow is calculated to turn high protein and carbohydrates into milk and butter fat with minimum waste in the process. All the science of chemistry has been brought to the solution of the farmers' problems. Every forward step in nutrition has been promptly applied to animal feeding.

But no such scientific control has been applied to the feeding of the human family. Facts which have been recognized as necessary to the operation of a profitable dairy have as yet never been translated into terms applicable to the children and adults of the dairyman's family. That is why more than fifty per cent. of our school children are undernourished, and why, even in the country, child life is far less well cared for than the livestock in the farmyard. This strange and illogical situation is usually explained by the statement that the result of the proper feeding of beef cattle or dairy cows is directly reflected in increased income, while the feeding of the family around the dining table is a matter of personal preference, convenience and cost. If this is true, it is high time experiment stations were established for the study of the nutrition of the higher animals known as human beings, and the methods which have been so successful in the barn brought into the home. —*Baking Technology.*

Regulations Drafted for Tetraethyl Lead Gas.—Tentative regulations governing the manufacture, distribution, and use of tetraethyl lead gas and suggestions for regulations covering the sanitation of garages have been submitted by Surgeon General Cumming, of the United States Public Health Service, to the health officers of the various States for their consideration, comment and criticism. These regulations, when finally adopted, will mark a distinct step forward in the safeguarding of the manufacture and handling of dangerous chemicals. Of far more importance to industrial workers than the control of the manufacture of tetraethyl lead is the suggestion for regulations covering the sanitation of garages. During the recent investigations of the United States Public Health Service of the possible health hazard from the use of tetraethyl lead gasoline, it was found that lead was present in the dust of ordinary garages, and in one instance it formed as much as one per cent. of the total inorganic matter. When one considers that there are hundreds of thousands of garage workers, the extent and well nigh universal distribution of this health hazard is at once apparent, and the necessity for sanitary regulation obvious.

What Is Your Idea of Mouth Hygiene?

We will pay $100 for the best short article on "Mouth Hygiene" received before July 15, 1926.

Dr. A. J. Asgis, D.D.S., Dean and Prof. Stomatology Polyclinic Hospital, says: "The toothbrush is contra-indicated in mouth hygiene."

Dr. O. T. Osborne, Prof. Emeritus, Yale, says: "Bristles may prick the gums and cause the very infected areas they are supposed to prevent."

Dr. J. Kelly, D.M.D. (L.I.M.J. 1920), says he is "bitterly opposed to the toothbrush. For it injures the gums by cutting them and is a source of serious infection at times."

Dr. N. Whittaker, Form. Div. Child Hygiene N. Y. C., says: "The toothbrush in use is a septic instrument and any physician or intelligent dentist recommending it, is just as guilty of malpractice as though he used a septic instrument himself."

An Editorial in the N. Y. Med. J., 1919, on the subject of the toothbrush, says it injures the gums and rubs into the injuries "whatever bacteria it may have gathered anywhere throughout the mouth."

L. L. Baker, D.D.S. (The American Dental Surgeon, Apr., 1926), condemns the toothbrush as being unsanitary, and asks: "Can you keep your mouth clean by using one?"

The toothbrush is a breeder of bacteria, a retainer of food particles until they decay, a collector of bathroom dust and odors.

We have offered $1,000 to anyone who can prove the use of the toothbrush is not UNSCIENTIFIC, UNHYGIENIC AND DANGEROUS.

People have been misled into thinking the toothbrush cleans inter-proximal spaces CLEAN.

There are several substitutes for the toothbrush. Paper (used by a well known health institute), cotton and cloths.

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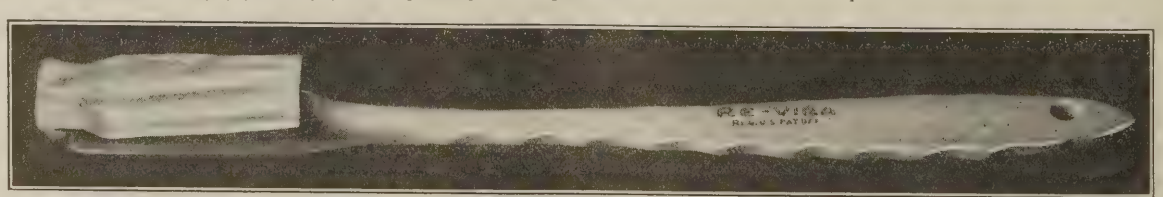

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"Gentlemen:

Kindly send me one thousand (1000) tablets of Diabesan. I am using your Diabesan in many cases of intestinal toxemia and diabetes with surprising good results.

Enclosed please find check.

With my best regards,

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(Signed) C. A. M., M.D."

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The Hand of Mr. F. T. Paul.—At the conclusion of the clinical meeting of the Liverpool Medical Institution on March 11, 1926, Mr. J. C. M. Given presiding, the members assembled in the lecture theatre to witness an interesting little ceremony—namely, the presentation to the institution of a bronze cast of the right hand of Mr. F. T. Paul, executed from a cast by Mr. H. Tyson Smith. Mr. Frank Jeans, the donor of the bronze, said that Mr. Paul's name was known to every surgeon as a pioneer and an inventor, Paul's tube being as epoch making an instrument as that of another Liverpool surgeon, Thomas's splint. Therefore he thought that, as a remembrance of Paul, a past president of the Liverpool Medical Institution and a most gifted operator, a cast of his hand would be acceptable to the institution. "Paul's operating in the heyday of his manual efficiency," he said, "always made me think that he did with his hands what Pavlova did with her feet, only Paul's work was much more useful. I have an additional reason for wishing to pay a tribute to Paul, because it is to him that I owe the continued existence upon this earth of my wife—but that is a personal matter." Mr. Paul, in acknowledging the courtesy of the institution in accepting the gift and the kindness of Mr. Jeans in thinking of it, admitted that at first he had regarded the matter somewhat as a joke, and, while confessing that he had always been fond of using his hands from his earliest years, he reminded the audience that "a gentle touch comes from the heart rather than from the hands, a touch inspired by a true sympathy with the patient's tissue—in this way only could a man attain the hand of a surgeon." The president then expressed his pleasure in accepting the bronze cast in the name of the Liverpool Medical Institution, and thanked Mr. Jeans most sincerely for his very acceptable gift. All our readers will acknowledge the fitness of the retention in the Liverpool Medical Institution of a permanent memorial of the work of Mr. Paul. Not only is he a great as well as a skilful surgeon, but he was one of the founders of the Liverpool Medical School, and from its earliest days his work has contributed to the building up of the great tradition of that school.—*The Lancet,* March 27, 1926.

Chinese Vertical Writing Found Easiest Reading. — Chinese, oldest of languages, is commonly thought of as the most difficult. But this is an error, if the difficulty of a langauge is measured by the speed with which it may be read. Prof. Walter R. Miles, of the department of experimental psychology of Leland Stanford University, and Eugene Shan, a graduate student, in a series of comprehensive tests have learned that Chinese may be read more rapidly than English, and that type set vertically is more efficient and causes less eye strain than type set as is this. In arriving at these conclusions Dr. Miles made use of eleven Chinese students, all of whom were born in China and were brought up on "vertical newspapers"; that is, on Chinese print reading up and down. He photographed their eyes, measuring their movements and noting how long each rested on a single group of words and calculating from that their speed in reading the two classes of selections. While the entire eye was illuminated and photographed it was the cornea, or white of the eye, that presented the opportunity for study. The cornea, being illuminated, changed its angle of reflection during each movement. The scientists found that the eye is never absolutely still, for when photographing a member fixed on a single spot, its edges left a hazy outline on the negative.

The selections read were in both English and Chinese, taken from a magazine article. The Chinese was set both horizontally and vertically for various experiments. It was found that at each reading pause the eye perceived a greater number of words of vertical type than of horizontal, while a greater number of vertical words were read each second than were horizontal words. The vertical reading matter, which Dr. Miles found to be more efficient, if applied to newspaper and magazine columns in the United States would bring about this change: You would commence reading at the upper right hand corner of the column or page and read down, progressing by columns from right to left. Each succeeding letter of a word would be set beneath its predecessor rather than alongside. Punctuation marks to indicate pauses, sentences and paragraphs would be used as at present. It has been a popular idea of long standing that horizontal reading matter may be perceived and understood with less strain to the eye, and, in fact, many Chinese papers have changed over to this style of type setting during the last few years. But Dr. Miles's analysis of his investigations indicate this to be an erroneous impression. Investigations subsequent to those he has already reported upon bear out the earlier conclusions. —*Science Service.*

Child Welfare Work in France.—Child welfare courses have been organized by various charitable institutions for women and girls of the leisured classes at the *Fondation Budin,* the dispensaries of *la Glacière* and the *Rue de la Convention, Les Annales,* and the Red Cross Central School of Child Welfare. Lectures are given at the Lariboisière and Charité to women teachers following the health courses at the Institute of Home Medicine. After the war certain journals devoted a column to child welfare, or published authoritative papers on the subject. In 1922 at the International Congress for the Protection of Motherhood and Childhood held in Paris, it was unanimously voted that "the problem will be facilitated to a great extent when a simple course of lectures, adapted to the ages of the pupils, on child welfare and hygiene is included in the curriculum of schools for girls and young women, with permission for the subject to form part of their examinations." In 1923, the Minister of Health, Paul Strauss, and the Minister of Education, Léon Bérard, issued a decree by which the teaching of child welfare became compulsory for girls in the higher classes of the primary schools, and included besides theoretical instruction given by the women teachers, visits to day nurseries and baby welfare clinics. A clear and condensed series of ten lessons, prepared and published by the National Committee on Child Welfare, and a little book on mothercraft were used as a basis of instruction. "Finally," writes the author, "to supplement and complete the program for the popular teaching of child welfare, I compiled, at the request of the Minister of Agriculture, an elementary course in seven lessons entitled Mothers of the Future, which has been adapted for the cinematograph."—*World's Health.*

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Approximately 45 times the germicidal power of Phenol.
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LITERATURE SENT UPON REQUEST

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New York Chicago New Orleans St. Louis Atlanta Philadelphia Kansas City San Francisco Boston

Long Distance Running Unnatural.—A study of the muscular activities of primitive man teaches the lesson that neither anatomically nor instinctively is man, civilized or uncivilized, equipped for long distance running. In the primitive state he does not resort to it as a means of protection from wild beasts, which, by the way, are little likely to atack him unless molested. Nor in his hunting expeditions is he called upon to run long distances, for his method of hunting is essentially that adopted by most carnivora, i. e., by stalking. In short, under natural conditions man rarely, if ever, has occasion to run long distances. When trekking in search of fresh pastures he walks. Short distance running serves most if not all his purposes, as in play, and in seeking shelter.

It would thus appear that long distance running is not natural to man, and, such being the case, it is difficult to see what good purpose can be served by it, as regards either health or physique. It is evident that it must put considerable strain on the heart, seeing that the vigorous rhythmic contractions of practically all the voluntary muscles of the body drive the blood into the right cardiac chambers in quantities many times greater than during rest or moderate exercise, and unless the right ventricle is able to deliver its contents into the lungs with sufficient promptitude, dilatation of that chamber is apt to ensue. On the other hand, in games involving intermittent strenuous exercise, such as tennis, the heart is afforded ample opportunity to recover itself after each bout, and this game can be played with impunity for hours together by many people past middle life, provided the heart muscle is healthy and well supplied with blood, and provided also the arterial blood pressure is low. —*Medical Press and Circular,* March 10, 1926.

Newspapers Help to Protect Unfortunate Children.—One of the latest contributions of the newspapers to the education of the public in matters relating to child welfare is in connection with advertisements of boarding homes for children. In response to a request from the State Commissioner of Health for cooperation in the enforcement of the law requiring any person who conducts a boarding home for children to have a license from the local board of health, many of the newspapers are refusing to accept advertisements unless evidence of the compliance with the legal requirements is furnished.

The following notice published daily by the *Knickerbocker Press* of Albany, on one of its advertising pages, illustrates a method which is very effective:

Board for Children

Any person who conducts a boarding home for children, a maternity home or a day nursery is required by LAW to secure a license from the local board of health granting them this authority. No advertisement will be accepted under this classification unless presented personally by the advertiser with written permission to advertise signed by the health officer.

The department finds that such a statement published daily accomplishes three things, viz., it acquaints the advertiser with the law, it put persons seeking such homes on guard against places holding no license, and it furnishes the department with a check on persons boarding children, thereby enabling it to investigate and find out if they are meeting other requirements of the law in the conduct of boarding homes and day nurseries.—*Health News.*

Quinine Shortage.—That there is a definite shortage of quinine and that this is in great measure due to the Dutch monopoly is proved beyond doubt by the report of the experts who were appointed as a special subcommittee by the Malaria Commission of the League of Nations, says the *Medical Press and Circular.* According to their findings, there is a distinct shortage of quinine available for sufferers in many districts; the high prices render its liberal use impossible; and the method promising best results would be the discovery of the efficacy of some combination of the alkaloids of cinchona, other than quinine, which could be obtained from the trees grown in countries other than the Dutch East Indies. The world's annual production of cinchona bark is about ten thousand and six hundred tons, of which about nine tenths is produced in the Dutch East Indies; of the remainder India produces eight hundred and seventy tons, South America two hundred tons, and Africa fifty tons. The percentage of quinine from Dutch bark is from six to seven per cent.; from Indian bark, from four and five tenths to five per cent.; from Peruvian and other barks, from two and five tenths to four and five tenths per cent. Existing factories produce only six hundred thousand kilograms annually, a supply considerably below the demand: one factory alone in Java produces one third of the total world's supply. Amsterdam fixes the market price by a convention entered into between the growers and manufacturers; and the present price yields a return of about thirty-six per cent. on invested capital. The production is strictly limited, and the amount of quinine in the open market is negligible.

Hibernation.—The study of hibernation in animals has been a favorite pursuit of many scientific men. One of John Hunter's papers to the Royal Society embodied an account of various experiments he had made some years before upon the heat of animals and vegetables, proving that living bodies possess a power of maintaining their heat against the influence of external cold in a degree proportioned to their rank in the scale of organization.

The hibernating state of animals has nothing analogous in the life of man. In some it is continuous through the winter until the spring; in others, while interrupted by sunny days, it begins again with the return of cold weather. The bat, the marmot, and the dormouse belong to the former class; the bear, the badger, the polecat, and the hedgehog to the latter. The condition of hibernation is characterized by unconsciousness, lowered body temperature, retarded circulation, slight superficial breathing, no ingestion of food, no elimination of excreta, a condition of minimal passive metabolism. The energy required is secured from the oxidation of fat, and the mammals have a special gland which serves this purpose in hibernation. Some species of fish, as pointed out by Cuvier, possess the opposite faculty of summer sleep and, burying themselves in the mud when the water around is dried up by drought, become torpid until the advent of moisture awakens them. During the dry season, lizards, crocodiles, snakes and toads lie in the ooze of swamps and river beds until the rain comes.—*Medical Press and Circular,* March 17, 1926.

In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

Reprints of clinical experiments with sweetened condensed milk will be sent upon request.

Write: **WELFARE ORGANIZATION, BORDEN COMPANY**
350 Madison Avenue, New York City

Amenorrhoea
Dysmenorrhoea
Menorrhagia

These conditions are usually disturbances of internal secretions and require internal secretion therapy.

"For the female organism is peculiarly susceptible to physiologic and pathologic changes in the general endocrine system."
Graves—*Gynecology*, 2nd Ed., 1921.

HORMOTONE

restores to normal the endocrine mechanism of menstruation.

G. W. CARNRICK CO.

417-421 Canal Street - - - NEW YORK, N. Y.

Pollen Sensitization.—J. H. Black, in the preliminary report published in the *Journal of Laboratory and Clinical Medicine,* February, 1925, concludes from his investigation on the standardization of pollen extracts that the active substance in pollen is not a protein, nor does the work support the suggestion of Grove and Coca that it is related to an enzyme. None of the methods of standardization of pollen extracts in common use were found to be of value. The reaction of the nasal mucosa of a ragweed sensitive individual may serve as a reliable criterion for the determination of the amount of active substance in ragweed pollen extracts.

Pamphlet Instruction Reduces Venereal Disease Cases.—The practical value of giving young men information regarding the venereal diseases is attested by word received by the United States Public Health Service from one of the recruiting agencies of the United States Shipping Board. Some time ago, the Public Health Service supplied the Recruiting Service of the Shipping Board with pamphlets suitable for distribution to young men. These were given out to the men of the crews on vessels operating to the Orient and the results have been designated as farreaching. Physicians attached to passenger vessels report that the distribution of these pamphlets among the crews had the effect of very considerably reducing the number of venereal disease cases.

Results Obtained With New Tuberculosis Vaccine.—Professor Calmette, of the Pasteur Institute, Paris, read a paper recently before the Paris Academy of Sciences in which he described the results he has obtained with his new vaccine against tuberculosis, administered in newly born babies. Not one of the children subjected to the original experiments in 1921 and 1922 succumbed to any disease of tuberculous origin. In 1924 and 1925 another group of babies numbering 5,183 were vaccinated, of whom only seven tenths per cent. died from diseases presumed to be of tubercular origin. According to figures published by the Public Health Bureau, from twenty-five to 32.3 per cent. of children born in surroundings infected with tuberculosis ordinarily die. The vaccine appears to retain its efficiency from fifteen to eighteen months.

A Nationwide Appeal for Better Obstetrics.—A joint committee representing the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, and the American Gynecological Society, has organized a nationwide propaganda to present an appeal for better obstetrics, more definite prenatal care, and rigid asepsis. Through state chairmen of groups of lecturers, concerted effort will be made to have a maternal welfare program given before every county and district medical society in each state. Names of speakers will be furnished by the state chairman to the secretary of the state society, from whom secretaries of district and county societies may obtain information. The organization of the committee is now comprehensive throughout the United States, and is beginning to function in a very effective manner.—*Bulletin of the American Medical Association.*

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

NEPHRITIS. By Herman Elwyn, M.D. New York: The MacMillan Company, 1926. Pp. 347.

CLINIQUE MÉDICALE. De L'Hôpital Beaujon. Par Ch. Achard. Deuxième Série. Paris: Masson et Cie, 1925. Pp. 336.

RÖNTGENBEHANDLUNG INNERER KRANKHEITEN. Von Prof. Dr. W. Parrisius. Mit Vierundeünfzig Abbildungen. Leipzig: S. Hirzel, 1926. Pp. 227.

L'EXPLORATION FONCTIONNELLE DU FOIE ET L'INSUFFISANCE HEPATIQUE. Par Noël Fiessinger et Henry Walter. Paris: Masson et Cie, 1925. Pp. 388.

LE TERRAIN HEREDOSYPHILITIQUE. Aperçu de Pathologie Générale et de Clinique Infantile. Par V. Hutinel. Paris: Masson et Cie, 1926. Pp. 455.

INDIGESTION. What It Is and How to Prevent It. By Arthur L. Holland, M.D. New York and London: D. Appleton and Company, 1926. Pp. 130.

LES TUMEURS DU CERVEAU. Par Dr. Viggo Christiansen Avec une Préface du Dr. Pierre Marie. Deuxième Edition. Paris: Masson et Cie, 1925. Pp. 397.

PSYCHOANALYSIS AND BEYOND PSYCHOANALYSIS. By Leonard L. Landis, M.D. New York: American Association of Independent Physicians, 1926. Pp. 212.

THERAPEUTIQUE CHIRURGICALE. Par P. Lecène et R. Leriche. Tome III, Abdomen et Organes Génito-Urinaires. Par P. Lecene. Paris: Masson et Cie, 1926. Pp. 645.

OPERATIVE CYSTOSCOPY. By E. Canny Ryall, F.R.C.S. With 115 Plates Containing 670 Original Illustrations, of Which 528 are Colored. St. Louis: C. V. Mosby Company, 1925.

NOUVEAU TRAITÉ DE MÉDECINE. Fascicule XIX, Pathologie du Systeme Nerveux (Suite) Cerveau et Cervelet. Par G. H. Roger, Fernand Widal, P. J. Reisser. Paris: Masson et Cie, 1925. Pp. 1017.

KINESIE PARADOXALE DES PARKINSONIENS. Contribution a l'Etude du Mécanisme de la Motilité Volontaire. Dr. J. Jarkowski. Travail du Service du Docteur Babinski. Paris: Masson et Cie, 1925. Pp. 72.

SURGICAL CLINICS OF NORTH AMERICA. Philadelphia Number, December, 1925. Volume V, Number VI. With index to volume. Illustrated. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 223.

CANCER COMMISSION OF HARVARD UNIVERSITY. Thirteenth Annual Report of the Collis P. Huntington Memorial Hospital for Cancer Research, and of the Laboratories of the Cancer Commission of Harvard University, 1924-1925. Boston, 1925. Pp. 69.

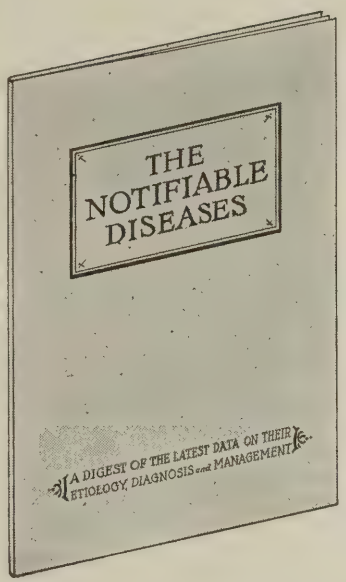
DAS KREBSPROBLEM. Rückblicke und Ausblicke Grund-und Scheinprobleme der Krebsforschung, Behandlung und-Verhutung. Klinische-Biologische. Darlegungen. Von Dr. Alfred Greil, Leipzig: Johann Ambrosius Barth, 1925. Pp. 181.

CONTRIBUTION A L'ÉTUDE DES PARAPLEGIES POTTIQUES. Essai sur L'Evolution et le Prognostic, Basé sur 40 Observations Personnelles. Par Mme. le Dr. Sorre-Dejerine. Preface du Dr. André-Thomas. Paris: Masson et Cie, 1926. Pp. 394.

ANATOMIE CÉRÉBRALE NOYAUX GRIS CENTRAUN ET RÉGION MESENCEPHALO-SOUS-OPTIQUE. Par Ch. Foix et J. Nicolesco. Suivi d'un Appendice sur l'Anatomie Pathologique de la Maladie de Parkinson. Iliustre. Paris: Masson et Cie, 1925. Pp. 578.

HANDBUCH DER TROPENKRANKHEITEN. Herausgegeben von Prof. Dr. Carl Mense. Dritte Auflage. Vierter Band, mit 149 Abbildungen im Text, 18 schwarzen und 11 farbigen Tafeln. Leipzig: Johann Ambrosius Barth, 1926. Pp. 762.

The Notifiable Diseases



Their etiology, transmission, incubation period, diagnosis, duration, quarantine restrictions, and terminal disinfection.

Prepared under expert supervision, this timely booklet has been especially arranged to furnish the busy practitioner with a wealth of condensed information concerning the contagious diseases, that he cannot obtain elsewhere except at the cost of much time and effort.

If you would like to have a copy of this remarkably useful and attractively printed booklet, send in your request today with your professional card, and it will be sent free of all expense, by return mail.

If you wish to test **Gray's Glycerine Tonic Comp.** in some case of debility, malnutrition or convalescence after Grippe, Measles, Scarlet Fever and so on, a liberal sample is at your service.

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Valentine's Meat-Juice

For **Quieting** the **Irritable Stomach** in **Pregnancy,** for **Rapidly Restoring** the **Vital Forces** in **Hemorrhage,** for **Sustaining** and **Strengthening** in **Long** and **Exhausting Labor, Valentine's Meat-Juice** is extensively employed in

Obstetrical Practice.

Dr. E. Duloroy, *Physician Accoucher to the International Hospital, Paris, France:* "A young accouchée, in a very weak condition and suffering from stomach trouble, could retain no food, but was able to assimilate VALENTINE'S MEAT-JUICE given at first in small doses. An improvement was quickly visible, the patient recovered her strength and is today in good health."

Dr. Javier Ortis y Ferrer, *Physician to the Municipal Charity of Madrid, Spain:* "VALENTINE'S MEAT-JUICE has given the happiest results in cases of debility in the asthenia produced by operations of confinements. In some cases of Tuberculosis it restored exhausted strength, and in every case where organic exhaustion manifested itself as an effect of disease."

Physicians are invited to send for brochures containing clinical reports.

For Sale by American and European Chemists and Druggists.

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VALENTINE'S PREPARATION
NUTRIO PER ME
VOLUME 1 4/5 OZ.
MEAT JUICE
The result of an Original Process of preparing Meat and extracting its Juice by which the elements of nutrition are contained in a State ready for immediate absorption.
DIRECTIONS. Dissolve one teaspoonful of the Preparation in three tablespoonfuls of cold or warm water—boiling water changes the character of the preparation

Miscellany.

Twentieth Century Progress in Preventive Medicine.—Keeping well has always been a profound concern of humanity, but the idea that diseases can be prevented by the intelligent application of human knowledge is of recent birth. Indeed this conception of the problem is still so young that developments growing out of it have taken place largely within the memory of those yet alive.

As a manifestation of these developments, witness the phenomenal growth of public health organizations.

In 1909 most of the extragovernmental health associations and societies were either not in existence or scarcely more than nominal institutions so far as membership and resources were concerned. Today there are more than a score of powerful national agencies, most of which are coordinated in the National Health Council, and innumerable local organizations with combined resources that would do credit to a national budget. Every state and every city worthy of that name maintains a health department; innumerable welfare, civic, social and fraternal clubs and societies have sections and departments of health. Wealthy men have created scores of foundations with almost unlimited resources for promoting public health service. Insurance companies have undertaken extensive crusades against disease and are maintaining highly developed laboratories and large field staffs for carrying on this sort of work.

So important has health organization become that the League of Nations has created and maintains a highly developed health section. In the United States there has been and still is a strong sentiment in favor of creating a national health department, headed by a cabinet member. Another large movement in this country is the Pan-American Sanitary Bureau, including in its membership the nations of North and South America.

A big commercial concern with very extensive holdings in the American tropics recently initiated and paid the bills of an international conference on health problems in Tropical America, which was held at Kingston, Jamaica, and brought together eighty-eight of the world's outstanding authorities on public health and sanitary problems. Such an undertaking would have been considered almost ridiculous twenty-five years ago.

The first county health department was organized as late as 1911. Now there are something like 270 of these important public health administrative units scattered throughout the United States.

At the beginning of the century there were very few publications devoted chiefly to preventive medicine, and probably none of a popular character. Now the market is flooded with health literature, some of which is of course questionable. Practically all the state health departments publish and distribute gratuitously pamphlets relating to communicable diseases. Not a few of these departments as well as the city health departments generally publish weekly or monthly bulletins on timely health subjects, vital statistics, etc. A number of insurance companies have gone deeply into health propaganda, and various

INTERESTING INVESTIGATIONS MADE AT THE HORACE GREELEY LABORATORY

April and May 1926, and by Dr. L. H. Cornwall, Bacteriologist New York City

36 new toothbrushes were purchased, placed in separate test tubes and sterilized.
Brushes were given to as many people. After cleaning the teeth each brush was rinsed in water and returned to its container.
Into each container was poured 10 cc of sterile 0.9 per cent saline (covering bristle end of brushes) and the containers returned to the ice-box for 24 hrs.
Brushes were then shaken out in the saline and removed from the tubes. Tubes were then well shaken and .01 of a cc of the contents of each was planted on a tube of Loeffler's blood serum and the latter incubated for 24 hours.
The saline remaining in the 36 tubes was then transferred to as many centrifuge tubes and centrifuged for five minutes at 2200 revolutions. Smears were made of the sediment and stained with methylene blue. Identification of organisms was made from their morphology in the above mentioned smears and in smears from cultures and replants, and peculiarities of growth in replants upon various media. Altogether some 500 cultures and 600 smears were made and examined.

FINDINGS IN CONDENSED FORM

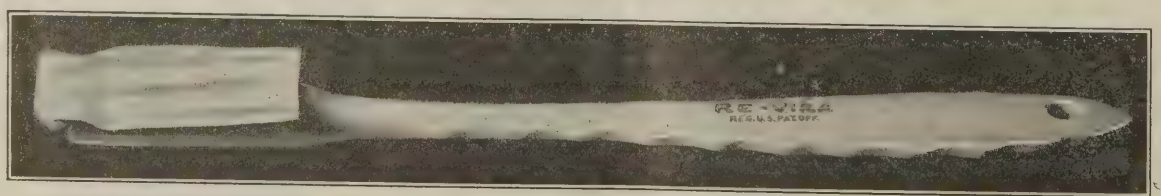
36 (all) of the brushes showed Staphylococci, aureus or albus or both,
31 of the same brushes showed Pneumococci,
19 showed streptococci, non-hemolytic,
1 showed streptococci hemolytic,
11 showed Vincents angina.

10 brushes used only five days were examined by Dr. Cornwall for organic matter. It was demonstrated in every case.
12 brushes of diphtheria cases were examined. 9 showed diphtheria bacilli. One week later 8 of the brushes still showed diphtheria bacilli.

As a result of these findings how can we reconcile ourselves to the use of the toothbrush for practicing MOUTH HYGIENE.

RE VIRA

Provides a clean pad each time the teeth are cleaned and the gums massaged. Outfits, Adult's $1. Child's $0.75. Special price to Physicians and Dentists.



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"The Hypodermic Pulmotor"

Acts directly upon
the respiratory
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Resuscitation

in less time than
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can be put in operation

Descriptive literature on request

ERNST BISCHOFF CO., Inc.
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DIABETES, TOXEMIA AND DIABESAN

Dr. C. A. M. of Atlantic City, New Jersey, writes us under date of January 20th, 1926, as follows:

"Gentlemen:

Kindly send me one thousand (1000) tablets of Diabesan. I am using your Diabesan in many cases of intestinal toxemia and diabetes with surprising good results.

Enclosed please find check.

With my best regards,

Yours,
(Signed) C. A. M., M.D."

Diabesan is efficacious and harmless. There is no danger of an overdose.

Literature on request

Solosan Company, Incorporated

17 Water St. - - - Morristown, N. J.

medical associations publish popular health literature. Household magazines, newspapers, the radio and the movies have all joined in the good work.

Industrial hygiene has come into being as a definite part of the practice of preventive medicine during the present century. In 1900 only eleven states were included in the United States Registration area for deaths. Now all but eight states in the Union are in federal registration area. Mental hygiene has developed only within the last decade, and promises to become a predominating factor not only in revolutionizing the methods of handling criminals, but in allocating individuals into suitable school classes and vocations, thereby increasing at once efficiency and happiness.—*Abstracted from Illinois Health News.*

Milk a Century Ago.—Before a recent meeting of the Brooklyn Pediatric Society, Dr. Harris Moak, in discussing the sanitary control of clean milk, read the following paragraphs from Louden's *Encyclopedia of Agriculture,* which has a preface bearing the date June 20, 1825, just a century ago. The quotation is most apt just now when New York City is so greatly interested in the milk problem:

"The milk used by the human species is obtained from various animals, but chiefly from the cow, ass, ewe, goat, mare, and camel; that in most general use in British dairying is the milk of the cow, which in modern times has received great improvement in quantity as well as quality, by ameliorations in the form of milch cows, in their mode of nourishment, and in the management of the dairy.

"The constituent parts of milk are found to be oil, curd, gelatine, sugar of milk, muriate of soda, muriate of potash, phosphate of lime and sulphur. These substances enter into the milk of all animals, but the proportions varying in different species.

"The properties requisite in a good milkhouse are, that it be kept cool in summer and moderately warm in winter, so as to preserve a temperature nearly the same throughout the whole year, or about 45°; and that it be dry, so as to admit of being kept clean and sweet at all times. For these reasons a northern exposure is the best, and this as much under the shade of trees or buildings as possible; if it can be so situated that the sun can have no influence either on the roof or walls, so much the better. A well constructed butter dairy should consist of three apartments: a milkhouse, a churning house, with proper boiler, as well as other conveniences for scalding and washing the implements, and a room for keeping them in, and for drying and airing them, when the weather will not permit of its being done without doors.

"To promote cleanliness in regard to milking, cows are in some places curried, combed, brushed, and clothed like horses; before milking their udders and teats were washed and dried, and their tails trussed up. It would be well if a part of this refinement were adopted in all dairies; that of using the comb and brush, and washing the udder, is indispensable in every establishment where clean milk is an object. According to Moubray snuff takers, sluts, and daudles are unfit to be dairywomen, and no milker should ever be suffered to enter the dairy in a dirty apron covered with hairs from the cowhouse."—*Long Island Medical Journal.*

Diatussin

Whooping Cough

In doses of one or two drops in infants, and two to five drops in older children,

the paroxysms are reduced in number and lessened in severity. - - - - -
Contains no opiates or bromides

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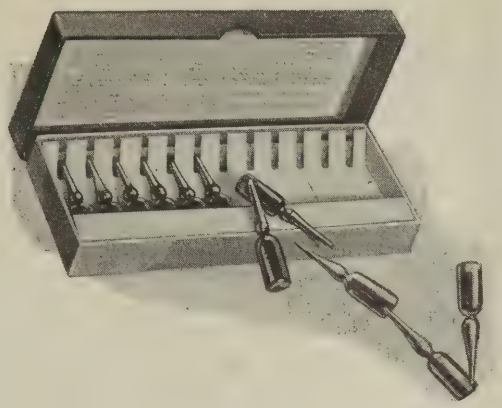

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The Proto-Enzyme Treatment for Gonorrhea

Indicated in all types of cases, epididymitis, vesiculitis, orchitis, "pus-tube" cases, salpingitis, and particularly effective in arthritis.

CLEAN SIMPLE SAFE

No Irrigation Required. No Stomach Dosing.

The average case responds in from 10 to 12 treatments.

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Indicated in treatment of infections of the urinary tract.
Approximately 45 times the germicidal power of Phenol.
Non-toxic in therapeutic doses.
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REFERENCES ON CAPROKOL

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Jour. of Urology. Aug., 1925. Vol. XIV, No. 2.
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The Canadian Med. Assoc. Jour. 1925, Vol. XV, p. p. 787-788.
Jour. A. M. A., Dec. 12th, 1925. Vol. 85, No. 24, p. p. 1855-1861.

LITERATURE SENT UPON REQUEST

SHARP & DOHME
BALTIMORE

New York Chicago New Orleans St. Louis Atlanta Philadelphia Kansas City San Francisco Boston

Cancer in Relation to Occupation.—An investigation into the statistics of cancer in different trades and professions by Dr. Matthew Young and Mr. W. T. Russell, with the collaboration of Dr. John Brownlee and Dr. E. L. Collis, was recently published by the Medical Research Council. The work was made possible by the courtesy of the Registrar-General in affording facilities of access to certain documents in his possession. These included cards on which were coded the sex, age, specific trade, and cause of death of men who died in 1910, 1911, and 1912. On 46,118 cards which recorded deaths from malignant disease the site of the tumor was for the most part noted, and it has thus been possible to make a detailed survey of the relation of cancer to occupation.

A brief introduction is followed by a discussion of previously published data. The methods of analysis used in this investigation are then set out. There follow sections on the incidence of cancer in the principal sites in different occupations, and on the relationship between different types of cancer, between cancer in different sites and syphilis, and between cancer and chronic alcoholism. The conclusions of the investigation are then briefly summarized. The close association of some types of cancer with exposure to particular risks—for example, chimney-sweeps' cancer and mulespinners' cancer—has been confirmed, but no conclusive evidence has been obtained of such a connection between the nature of the employment and other forms of cancer, notably internal forms. In some occupations excessive smoking and drinking, which is permitted or facilitated by the nature of the occupation, appears to be the important predisposing factor and not anything inherent in the employment itself, while the incidence of syphilis in different occupational groups seems to have some association with that of lingual cancer. With the main conclusion that occupational risk is only one of several predisposing causes of cancer in different instances and under different circumstances all are likely to agree.

It was hoped that such an examination might give further information as to the wide influence of substances already recognized as harmful, or might even disclose other injurious substances. But the difficulty of interpreting the material has proved very great, and the result of a praiseworthy and laborious effort appears on the whole to be disappointing. In many trades or occupations the number employed is small and consequently the number of deaths is liable to considerable random error. Again, statistical science is still in a developmental stage, and there exists difference of opinion between persons equally competent to judge as to the applicability of particular methods of comparing figures. For example, the strong preference expressed by the authors for the use of the socalled life table death rates over standardized death rates is not shared by some of their colleagues, and there are other technical points over which experts are not yet in agreement. The use of the method of proportional mortality has the disadvantage that the proportion of cancer of any particular site in one occupational group may be high simply because within that group the rate of mortality from cancer of another site is low, and the majority of the Statistical Committee of the Council are of opinion that conclusions based upon this method and unconfirmed or incapable of confirmation by a study of the site rates themselves should be accepted with reserve. However, sufficient material is provided in the tabular matter of this report, and in data previously published, to permit other investigators to try and elucidate this complex subject by pursuing research on different lines.—*Lancet,* February 6, 1926.

Convalescence.—John Bryant in an interesting article, published in the *Boston Medical and Surgical Journal* for September 17, 1925, says that the convalescent patient, be he medical or surgical, has suffered and is suffering from clinical neglect, and will continue to suffer from clinical neglect until it becomes accepted routine that he shall receive adequate treatment in wards (preferably in country convalescent institutions), from which the acutely ill are excluded. Adequate treatment of the convalescent patient implies treatment by a staff especially trained in the intelligent application of such methods as were developed in the army under the supervision of the Division of Physical Reconstruction, Surgeon General's Office; a staff, furthermore, trained to care primarily not for the acutely ill, but for those patients who are convalescing or suffering from illness not of acute type. The care of convalescence reached a higher level of efficiency in the United States Army during the late war than it has ever reached before or since, in an army or in civil life.

The procedures which in our Army produced such a satisfactory degree of efficiency in the care of convalescence are available for use in civil life. Foremost among these procedures may be mentioned occupational therapy and physiotherapy. An impressive Army experience in occupational therapy has demonstrated that, in the order named, ward academic and ward handicraft work are the two sections of occupational therapy which offer greatest promise of potential or lasting value to the convalescent patient.

The civil hospital which does not adapt for its own use those Army procedures which were proven so productive of positive and beneficial results in the care of convalescence, is not yielding maximum returns to its supporters, to its patients, or to its community. Voluntary adequate community care of our armies of young convalescents is relatively inexpensive. It is the only known alternative to expensive and involuntary care of our armies of old incurables. Inadequate care of convalescents spells half completed medical work, half cured patients, financial inefficiency, and economic waste.

Factors Influencing Recovery in Accidents.—E. McD. Stanton (*International Journal of Medicine and Surgery,* June, 1925) points out the importance of certain psychic factors in the recovery time of ordinary accidents. The physician himself may be responsible, by suggestion, for the development or avoidance of a traumatic neurosis in an accident or liability patient. Thus some physicians handling large numbers of traumatic cases seem almost never to have these neurotic symptoms develop; others regularly have them. Since return of function after a sprain or strain is a product of repair processes internally active in the individual himself, the morale of the patient becomes a very real force in effecting a normal recovery.

In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

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1926 Health Legislation.—From the viewpoint of the New York State Department of Health and of all who have had an interest in legislation affecting public health in New York State, the year 1926 has been a most satisfactory one, says *Health News*, May 17, 1926. The legislature has passed nine bills in which the State Department of Health was directly interested.

Chapter 185 added to the Public Health Law a new section, 25-a, providing for the control of dogs when rabies prevails, and repealed section 90 of the Farms and Markets Law. The measure was endorsed by the Commissioner of Farms and Markets.

Chapter 277 appropriated $59,387.98 to cover grants of State aid to counties.

Chapter 308 amends the Public Health Law increasing the compensation of local health officers, legalizing the appointment of acting health officers to serve in the temporary absence from duty of regularly appointed health officers, and authorizing boards of health to provide additional compensation to health officers for taking release cultures in diphtheria. The bill, identical with that introduced last year at the request of the department, was introduced this year at the request of the State Sanitary Officers' Association.

Chapter 309 authorizes the State Department of Health to make rules and regulations for the protection of the water supplies of State institutions and United States reservations. The measure was endorsed by the president of the State Hospital Commission.

Chapter 319 made an appropriation for construction of new buildings at the State laboratory.

Chapter 367 amends section 19-b of the Public Health Law relating to State aid to counties, making it more explicit and workable.

Chapter 499 amends the Public Health Law to provide that a county health unit may be abolished by the board of supervisors after two years, after a public hearing.

Chapter 635 amends the Domestic Relations Law to expedite the reporting of marriages.

Chapter 723 provides for the sale of the old Yates St. laboratory property, the proceeds to be applied to purchase of land adjoining the present State laboratory property.

One of the most notable features of the legislative session was the passage of the medical practice bill designed to facilitate action against illegal practitioners of medicine.

Rabies Prevention Bill Now a Law.—The Lattin bill relating to the prevention of rabies and adding to the public health law a new section 25-a having passed and been signed by the Governor is now chapter 185 of the laws of 1926. The act repeals section 90 of the farms and markets law under which dog quarantines have heretofore been established by the department of farms and markets.

This act further provides that when the state commissioner of health shall certify to a health officer that rabies exists among dogs in his municipality or district it shall be the duty of the health officer to give public notice and thereafter, until the state commissioner of health shall certify that rabies no longer exists, it shall be unlawful to permit a dog to be at large unless properly muzzled. It makes it the duty of all officers empowered to enforce state laws or local ordinances to cause any dog found at large and not so muzzled to be confined, or, if this is impracticable, to be immediately killed, and provides that any person killing a dog not so muzzled which is known to have attacked any person or domestic animal shall not be held liable for damages for such killing. The person killing or causing a dog to be killed under these conditions is required to report the facts to the local health officer.—*New York Medical Week*, May 15, 1926.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LA ARTERITIS PULMONAR Y SU CUADRO CLINICO.. By F. C. Arrillaga. Buenos Aires: Pedro Garcia, 1925. Pp. 274.

HEADACHE. Its Causes and Treatment. By Dr. Thomas F. Reilly. Philadelphia: P. Blakiston's Son & Co., 1926. Pp. 246.

KIDNEY DISEASE. From the Physician's Viewpoint. By Rolf Floyd, M.D. New York: James T. Dougherty, 1926. Pp. 181.

THE BOSTON CITY HOSPITAL. Sixty-First Annual Report of the Trustees including the Report of the Superintendent. Boston, 1925.

BLOOD PRESSURE, HIGH AND LOW. By Chester Tilton Stone, M.D. Second Edition. New York: Allen Ross and Company, 1925. Pp. 90.

FACTS ON THE HEART. By Richard C. Cabot, M.D. Illustrated. Philadelphia and London: W. B. Saunders Company, 1926. Pp. 781.

THE RESPIRATORY FUNCTION OF THE BLOOD. Part I, Lessons from High Altitudes. By Joseph Barcroft. Cambridge: The University Press, 1925. Pp. 207.

SCOLIOSIS. Rotary Lateral Curvature of the Spine. By Samuel Kleinberg, M.D., F.A.C.S. Illustrated. New York: Paul B. Hoeber, Inc., 1926. Pp. 311.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints, Volume LV. New York: The Rockefeller Institute for Medical Research, 1926. Pp. 599.

STATE OF NEW YORK. REPORT OF THE NEW YORK STATE VETERINARY COLLEGE AT CORNELL UNIVERSITY, FOR THE YEAR 1924-1925. Albany: J. B. Lyon Company, 1926. Pp. 238.

GASTRIC FUNCTION IN HEALTH AND DISEASE. By John A. Ryle, M.D. (Lond.) F.R.C.P. Oxford Medical Publications. New York: Oxford University Press, 1926. Pp. 152.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Index, Authors and Subjects, Volumes XXVI-L, 1917-1924. New York: Rockefeller Institute for Medical Research, 1926. Pp. 285.

PRINCIPLES AND PRACTICE OF ENDOCRINE MEDICINE. By William Nathaniel Berkeley, Ph.D., M.D. Illustrated with 56 Engravings and 4 Colored Plates. Philadelphia and New York: Lea & Febiger, 1926. Pp. 368.

MANUAL OF CLINICAL LABORATORY METHODS. By Clyde Lottridge Cummer, Ph.B., M.D. Second Edition, Thoroughly Revised. Illustrated with 169 Engravings and 12 Plates. Philadelphia and London: Lea & Febiger, 1926. Py. 547.

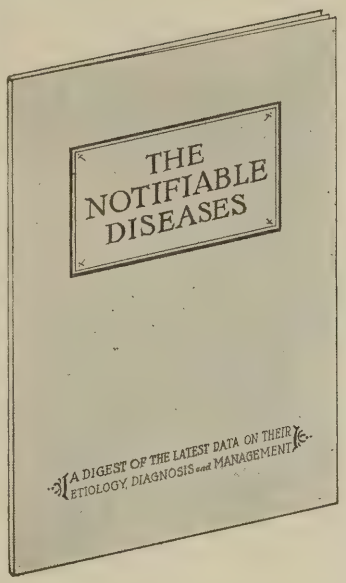
INDIVIDUAL GYMNASTICS. A Handbook of Corrective and Remedial Gymnastics. By Lilliam Curtis Drew. Third Edition, Thoroughly Revised. With 121 Engravings. Philadelphia and New York: Lea & Febiger, 1926. Pp. 276.

DIRECTORY OF CONVALESCENT HOMES SERVING NEW YORK CITY AND VICINITY. Prepared by Pauline Jordan. Issued by the Convalescence Service of the Hospital Information Bureau of the United Hospital Fund of New York. 1926. Pp. 88.

PLEOMORPHISM IN BACTERIAL PROTOPLASM. A Study in Psittacosis. By Andrew Todd McClintock, M.D. Archives of the Andrew Todd McClintock Memorial Foundation for the Study of Diseases of the Alimentary Canal, Volume 1. Wilkes-Barre: Andrew Todd McClintock Memorial Foundation, 1925. Pp. 240.

HANDBUCH DER BIOLOGISCHEN ARBEITMETHODEN. Abt. IV, Angewandte chemische und physikalische Methoden. Teil 6, Heft 2, herausgegeben von Prof. Dr. Emil Abderhalden. Methoden zum Studium der Funktionen des Magendarmkanals. By Friedrich Uhlmann. Berlin and Wien: Urban, Schwarzenburg, 1925. Pp. 463-620.

The Notifiable Diseases



Their etiology, transmission, incubation period, diagnosis, duration, quarantine restrictions, and terminal disinfection.

Prepared under expert supervision, this timely booklet has been especially arranged to furnish the busy practitioner with a wealth of condensed information concerning the contagious diseases, that he cannot obtain elsewhere except at the cost of much time and effort.

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In **Typhoid Fever Valentine's Meat-Juice** demonstrates its **Ease** of **Assimilation** and **Power** of **Restoring** and **Strengthening.**

I. Burney Yeo, M. D., *Professor of Therapeutics, King's College, London, in the well known work, "Food in Health and Disease":* "In a very severe case of Typhoid, under our care in King's College Hospital, with most alarming and profuse hemorrhage, we carried out a rigorous method of feeding with remarkably satisfacory results. The clear indication was to keep the intestines absolutely at rest and to allow no debris of food to pass through to excite peristaltic action. It was necessary therefore to give food which, while adequate to sustain and strengthen the patient, should be wholly absorbed in the stomach and upper part of the small intestines. To give milk might be fatal. For our purpose we selected VALENTINE'S MEAT-JUICE, giving one teasponful in a wineglassful of cold water every three hours, with one teaspoonful of brandy. The patient's diet was absolutely limited to these quantities for seven days. The plan answered admirably and the patient made a perfect recovery and fairly rapid convalescence."

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NUTRIO PER ME
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MEAT JUICE.
The result of an Original Process of preparing Meat and extracting its Juice by which the elements of nutrition are obtained in a State ready for immediate absorption.
DIRECTIONS. Dissolve one teaspoonful of the preparation in three tablespoonfuls of cold or warm water boiling water changes the character of the preparation.

M-442

Miscellany.

Vacancies in the Medical Faculty of Vienna.—The Vienna correspondent of the *Lancet* says a serious situation in the University of Vienna has been caused by the unexpected death of several professors within a short time of one another. A few weeks ago Prof. Friedrich Dimmer, the well known ophthalmic surgeon, died at the age of seventy years, and his eye clinic, of which he had been the director for many years, will perhaps be dissolved. Such at any rate was the intention of the Ministry of Finance which has to find the funds for the institution, and naturally it has caused widespread consternation in medical circles. It has been justly pointed out in numerous articles and resolutions that the ever-increasing importance of ophthalmology, and of Vienna ophthalmology especially—we may recall the names of Fuchs, Fäges, and Arlt—did not allow of a purely bureaucratic measure of this kind, which would drive away many students and doctors from this country, and thus result in the loss of more money than could be saved in abolishing the expenses of the clinic. It is to be hoped that the idea will be definitely abandoned. The University staff has suffered another serious loss by the sudden death of Prof. Josef Kyrle at the age of forty-six years. He had already done important work in dermatology, his principal investigations being concerned with the treatment of syphilis by malaria, the histology of skin diseases, and the eunuchoid conditions. He was destined to succeed Prof. Gustav Riehl, who is now finishing his honorary year and has passed his seventieth year, when he has to retire according to the rules of the University. Kyrle was a brilliant teacher whose clarity and impressive diction were reminiscent of the famous teachers of forty years ago when Vienna was the Mecca of medicine.

A Health Survey of Mexico.—One of the most thorough and interesting health surveys ever made of the Mexican Republic will be undertaken this summer by Dr. Frederick L. Hoffman, consulting statistician of the Prudential Insurance Company of America. He intends to cover the larger part of the Mexican Republic in an effort to determine the existing health situation and the methods which are being employed to eradicate disease and to improve the disease resistance of the native population.

This investigation has the wholehearted support of the Mexican Government and the endorsement of many of the leading members of the medical profession and public health authorities throughout the Republic, said Dr. Hoffman. He explained that the chief objects of the investigation concern the different elements of the Mexican population, but particularly the native Indian tribes out of touch with the large centres of population. The investigation, however, he continued, will include observations on variations in temperature, altitude, humidity and other climatic factors of importance. He intends to visit most of the hospitals throughout Mexico and collect data on the physical anthropology of native Indian tribes. In addition, he intends to give particular attention to the operations of Mexican insurance laws and to the extent to which the life insurance business in Mexico has been developed by domestic or foreign companies. In the tropical section he expects to give consideration to tropical diseases, including malaria and typhus fever.

Dr. Hoffman said he hoped that the results of his investigations might prove of considerable practical value to both the Mexican and the American people and set at rest many controversial medical questions which affect seriously the future development of the Mexican Republic.

Massachusetts Institute of Technology to Give Summer Courses in Public Health.—Among the 1926 summer courses to be given at the Massachusetts Institute of Technology July 6th-27th inclusive, are the following:

Health Education Methods, designed for teachers and for school nurses who have teaching responsibilities. New methods of health teaching as they have been developed in experimental work by the instructor and by other health workers in various parts of the country will be described. In addition to the classroom work, fifteen hours will be used in observation and field work under supervision.

Health Records and Statistical Procedure, a course which deals particularly with record keeping, together with the organization and presentation of health statistics in the work of school departments, private agencies and health departments. It is expected that students will be persons in charge of public health record keeping.

Public Health Laboratory Methods, a practical course in diagnostic methods and other procedures employed in public health laboratories. Training is given in laboratory diagnosis of diphtheria, tuberculosis, typhoid fever, malaria, and certain other communicable diseases and in the Wassermann and other complement fixation tests. This course is designed particularly for physicians, laboratory technicians and those preparing for administrative positions in public health.

Further information may be had by addressing the Massachusetts Institute of Technology, Cambridge, Mass.

Less Typhoid Fever During 1925.—Of the various outbreaks of typhoid fever which occurred in the State during 1925, seven were found to be due to infected milk and two to polluted water supplies.

Thirty typhoid carriers, exclusive of those found in State hospitals, were discovered during the year to which 122 primary and 7 secondary cases of the disease were attributed. At the end of the year 125 carriers remained on the list exclusive of those in State hospitals.

There were a total of 1,483 upstate cases of typhoid fever reported in the State in 1925 as compared with 1,602 in 1924. With one exception the case rate, 28 per 100,000 population, was the lowest on record. The mortality was slightly higher than during the previous three years, but lower than other years on record.

The increased mortality was due to an excess of deaths in January which resulted from cases appearing in December 1924, in connection with the oysterborne outbreak in New York City and vicinity. —*Health News.*

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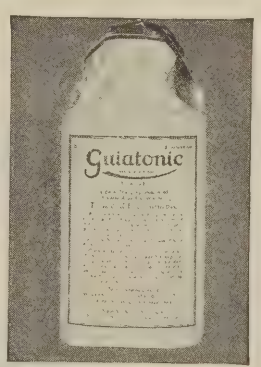
Imperfect or Incomplete Convalescence

as authoritative investigations have recently shown, is responsible for a large part of human illness.

After the fury of an acute infection subsides, the most effective measures are essential, therefore, to make recovery complete and certain. In the use of Guiatonic the practitioner has at his command a most efficient means of aiding and reinforcing the recuperative forces of the body. As a result of its regular use, the patient soon shows a substantial gain in weight, strength and vitality, with an early restoration of that state of physiologic balance that constitutes true recovery.



A palatable preparation of guaiacol and creosote which may be freely given to the weakest patient, without fear of gastric disturbance. *It contains no narcotics.*

Indicated in all depressed or debilitated conditions, or whenever a tonic is required.

Guiatonic

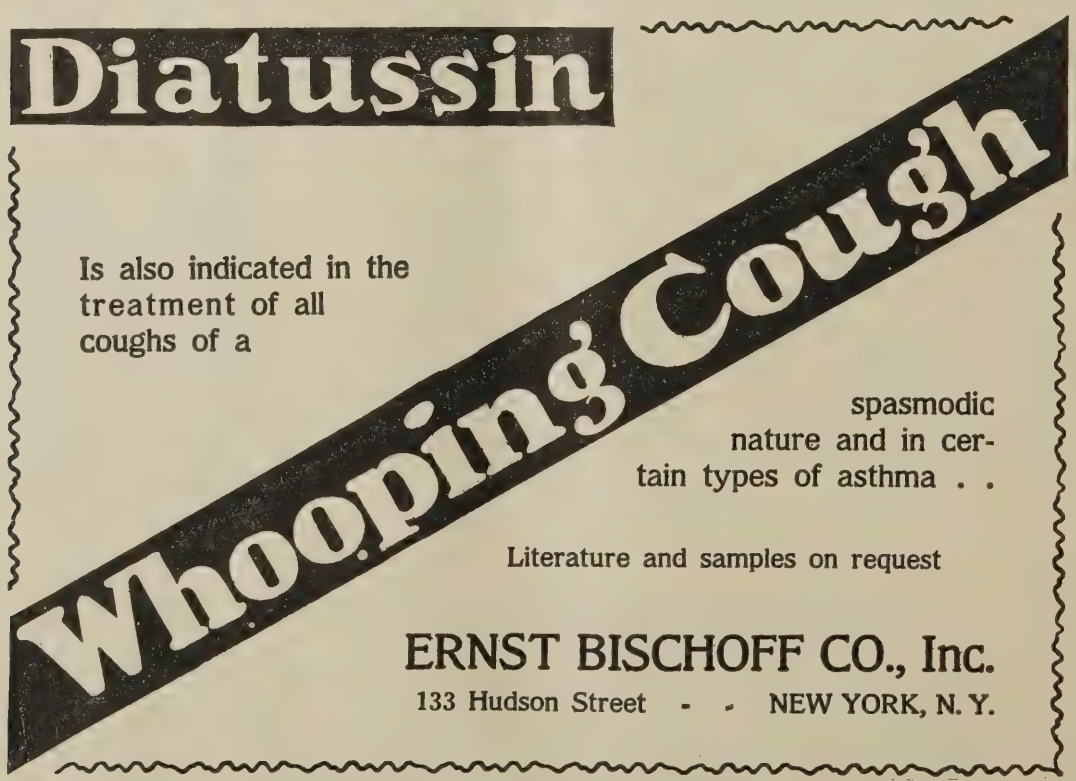
A liberal supply for testing free to physicians. William R. Warner & Company, Inc., Manufacturing Pharmaceutists since 1856. 113-123 West 18th Street, New York City.

Licensing of Foreign Physicians.—Heretofore physicians from abroad have always been welcomed by licensing boards in this country, and in most states the requirements, if different at all, were less strict than for graduates of our own American schools. In this connection, physicians coming from Canada have hardly been considered as foreigners. Their qualifications are as clearly recognized as those coming from medical schools of the United States. This is because Canadian physicians have had their part in the movement instigated by the medical profession of this country to improve the standards of medical education and licensure. Many of the physicians who came from abroad, also, have long since become honored members of the communities in which they reside and are mostly active members of our medical organizations. Even at this time, therefore, there is no desire to establish unreasonable restrictions against foreign physicians, especially those who are bona fide graduates of well recognized medical schools and who come from countries whose laws, customs and manners of living are similar to those of the United States.

Since the World War, however, a necessity for reasonable restrictions has developed. The numbers of physicians seeking licensure in this country have been increasing, as a result largely of the financial stress in their own countries from which they are endeavoring to escape. Among these there has been an unusual proportion whose credentials were of doubtful validity or distinctly fraudulent. It has become necessary for state authorities to establish legal safeguards over the admission of physicians from abroad. The requirement of American citizenship as an essential for the license has been adopted in eleven states;[1] in ten other states[2] foreign physicians must have taken out their first naturalization papers before being eligible for a license, and in five states[3] foreign physicians must have declared their intention to become American citizens. In Michigan and New York, in uncertain cases, a year's work in a medical school in this country must have been completed, while in Pennsylvania the foreign physician is required to have completed an internship in a hospital recognized by the licensing board.

These regulations, although representing a change of attitude on the part of state licensing boards, are still much more lenient than the requirements in countries abroad with which American physicians must comply. There is still the desire to welcome from abroad those who are properly qualified and who will become reputable and worthy members of their communities. The restrictions are necessary, however, to prevent the inpouring of those who are not properly qualified or who in other respects are undesirable. Under no circumstances should physicians from abroad be accepted unless their credentials have been carefully verified and unqestionable proofs obtained of identity.—*Jour. A. M. A.,* May 15, 1926.

[1]These states are: Arizona, Arkansas, Florida, Illinois, Indiana, Kansas, Kentucky, Mississippi, South Dakota, Tennessee and Wyoming.
[2]These states are: Alabama, Delaware, Louisiana, Maryland, Michigan, New Hampshire, North Dakota, Oregon, Texas and Virginia.
[3]These states are: Minnesota, Nebraska, New Jersey, New York and Ohio.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A powerful Antiseptic Germicide used successfully by surgeons in minor and major operations. Exerts a healing influence and induces rapid granulation. Soothing in burns—healing in wounds.

Campho-Phenique—A Dressing De Luxe
Possesses all the Antiseptic and Germicide properties of the liquid. It is a dry treatment for sores, wounds, cuts and abrasions of the skin.

Campho-Phenique Ointment
indicated in all diseases of the skin and scalp.

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Ointment, 4 oz. Cans	1.20

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Allaying Restlessness and Producing Refreshing Sleep

Especially indicated in insomnia from mental strain, neurasthenia and other neuroses; also an excellent sedative in sea-sickness.

Literature on Request

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Fundamental Data of Science Gathered in New Volumes.—The fundamental facts and figures upon which physical science is built have been brought together and issued for the use of the world in International Critical Tables, the first volume of which has just been issued by the National Research Council and the National Academy of Sciences.

Millions of experiments extending over years of time in the various laboratories of the world were necessary to produce the hundreds of pages of explanations and statistics that will be included in the five volumes of the completed work which are being compiled by the editors with the aid of specialists and experts here and abroad.

The first volume just off the press contains among other valuable information the accumulated data on no less than 9534 different chemical compounds, the new and old facts on radioactivity, and transmutation, astronomical and geodetic data and a comprehensive discussion of the most recent developments in the field of atomic structure, favorite speculative playground of physicists of the present moment.

Along with the international metric system and a listing of the seventy-four countries in which it is now compulsory are the local systems of weights and measures in use in twenty-five still conservative countries. The measures used by the Pharoahs of Egypt and the ancient Chaldeans may likewise be found side by side with their modern equivalent in feet and meters, gallons and litres.

Thousands of dollars and many hours of time will be saved the research workers of the present and the future by the use of this collection of necessary and essential data on a wide variety of allied subjects in one set of volumes.—*Science News Letter.*

Nerve Currents Heard on Radio Instrument.—The electric current that shoots along a nerve fibre has been detected by means of radio apparatus, according to Dr. E. D. Adrian, of Cambridge University, who described before a meeting of the Physiologcial Society his method of using a three tube instrument to make his delicate measurements.

It had long been known, he said, that the passing of messages down a nerve caused an electrical disturbance. But it had only been possible to record the effects from a large number of fibres at once, for example, the thousands of fibres from an eye, or to a muscle. The results obtained were therefore as confused as would be the superimposed records from all the telegraph wires between London and Manchester. Dr. Adrian's new apparatus makes it possible for the first time to obtain records in a rapidly moving photographic plate of the impulses passing along a single fibre.

In conjunction with Dr. Zottermann, a Norwegian neurologist, Dr. Adrian recorded the results of stimulating a sense organ connected with the brain by a single fibre. The sense organs in the skin which give information as to touch, pain, and temperature, are too near together for this to be easy. Those in the muscles subserving the socalled muscular sense are farther apart, and by stretching a frog's muscle it was found possible to stimulate a single one. The impulses were all of the same size, but as the muscle was stretched, their frequency was increased from ten to fifty per second. Differences of intensity are in fact transmitted through the nerves as differences of rhythm.

This is the first occasion on which the message passing along a nerve has been decoded, and the experiment opens up a new field of neurology, in the opinion of physiologists here. Within the next few years it should be possible to read the main types of messages entering and leaving the nervous system, and the time has been brought measurably nearer when it will be possible to record the actual events in the brain which are the physical correlate of consciousness.—*Science News Letter.*

Smell.—As Prof. Elliot Smith has often reminded us, primitive land animals lived in a world where perception must have been mostly dominated by the smells of things, says an editorial writer in the *Lancet,* April 24, 1926. In their evolutionary progress, vision and hearing became relatively more important. In the higher animals all three are well represented, but in man smell has not made anything like the advance of the other senses, and indeed it seems now to be in much the same place as it was in his remote ancestors. Associated with this primitive condition is the fact that the mind of man has great difficulty in dealing intellectually with the sense of smell and what it perceives. In the *Glasgow Medical Journal* for March, 1926, Dr. J. L. Halliday has an interesting discussion of the position. At present we have not got even a qualitative scale of smells, still less any means for their quantitative measurement. The sense seems to be fatigued extraordinarily quickly, which makes its measurement very difficult by the minimal perceptible dose method which is the only one available. Smells are individual, and no smell seems to have a clear relation to another smell. And while any smell may have the most vivid associations in the mind with other circumstances—evidently the useful state in primitive conditions—the human brain has not yet risen to abstracting smells, so that they can be associated by similarity with one another. There is hence no scale or spectrum of smells, and smells may be said to have no intellectual value. Interest is being taken in various quarters in this sad state of affairs; there is an occasional periodical *Osmics,* and Mr. E. E. Free has an article in the March issue of the *Forum,* and we may look forward with confidence to the time when human ingenuity will denominate smells as it has colors. It is after all not so very long ago that the color of blood could be described only as being blood-colored, just as nowadays we can get no further than saying that blood smells like blood. Though, to be sure, people realized that blood is not very dissimilar in color to some flowers thousands of years before they came to compare the smell of blood to the smell of anything else.

Health Heroes.—The Metropolitan Life Insurance Company has started the publication of a series of booklets on Health Heroes, written by Grace T. Hallock, formerly associate director of publications of the American Child Health Association, and C. E. Turner, associate professor of biology and public health, Massachusetts Institute of Technology. The first two booklets are on Louis Pasteur and Dr. Edward L. Trudeau. They will be followed by stories of Walter Reed and Jenner.—*Health News.*

In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

Reprints of clinical experiments with sweetened condensed milk will be sent upon request.

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The Cost of Rearing a Child.—A statistical survey of the items entering into the cost of bringing a child to maturity was recently undertaken by the Metropolitan Life Insurance Company, and their findings have been published in the *Statistical Bulletin*. After a careful analysis of all items of expenditure, they present the following itemized statement for the cost of rearing a child to the age of eighteen years:

1. Cost of being born	$250
2. Food	2,500
3. Clothing and shelter	3,400
4. Education, minor items met by the individual family purse	50
5. Health	284
6. Recreation	130
7. Insurance	54
8. Sundries	570
Total	$7,238

This does not include major items of education, which amount to about $1,100, the cost of schooling provided by the community.

In round numbers, therefore, we may put the total cost of raising a child to age eighteen, in accordance with the data here collected, at $7,200. In this summary figure no distinction has been made for sex because the difference in the amounts for girls and boys is relatively small. This amount is believed to be a fair representation of the money expended by a family of the $2,500 income class in raising a child through its minority.

A Tuberculosis Clinic at the New York Hospital.—A department for the investigation and treatment of tuberculosis of the genitourinary tract has been established at the Urological Clinic (James Buchanan Brady Foundation), New York Hospital, 8 West Sixteenth Street. The tuberculosis clinic sessions will be conducted on Tuesday and Friday afternoons at two o'clock for adults and on Saturday mornings at nine o'clock for children. The purpose of the new department is not only the surgical treatment of tuberculosis of the genitourinary tract but also to supplement the treatment with those measures that have proved of value in the general treatment of tuberculosis such as rest, diet and hygiene together with heliotherapy, artificial light therapy and tuberculin where these are indicated. The tuberculosis department is under the direction of Dr. O. S. Lowsley, director of the urological clinic (James Buchanan Brady Foundation), New York Hospital. Dr. Stanley L. Wang will be associated with the department in carrying on the supplemental tuberculosis treatment.—*New York Medical Week,* May 15, 1926.

Tuberculosis Clinics Discover Many Other Physical Defects.—The diagnostic facilities offered by the Health Department's tuberculosis clinics, which are conducted on a strictly consultation basis with the family physician, are often responsible for the discovery of many nontuberculous diseased conditions or defects not previously suspected.

During the last calendar year, 226 nontuberculous conditions were found as follows: Diseases of lungs and air passages (nontuberculous), 146; diseases of heart and bloodvessels, 42; miscellaneous, 33.—*Health News.*

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

DIE BÖSARTIGEN GESCHWÜLSTE DES AUGES. By H. Sattler. Leipzig: S. Hirzel, 1926. Pp. 361.

LA COQUELUCHE. By Henri Stévenin, M.D. Paris: Ernest Flammarion, 1926. Pp. 209.

YOUR HAIR AND YOUR HEALTH. By Oscar L. Levin, M.D. New York: Greenberg, 1926. Pp. 163.

LECONS DE PATHOLOGIE DIGESTIVE (Sixieme Serie). By M. Loeper. 1925. Masson et Cie. Pp. 272.

THE ROCKEFELLER FOUNDATION. Annual Report. 1924. New York: The Rockefeller Foundation. Pp. 447.

A MANUAL OF HYGIENE AND SANITATION. By Seneca Egbert, A.M., M.D., Phila. Lea & Febiger. 1926. Pp. 616.

MODERN METHODS OF AMPUTATION. By Thomas G. Orr, M.D. St. Louis: The C. V. Mosby Company, 1926. Pp. 117.

HANDBOOK OF DISEASES OF THE RECTUM. By Louis J. Hirschman, M.D. St. Louis: The C. V. Mosby Company, 1926. Pp. 403.

LACTOBACILLUS ACIDOPHILUS. By Nicholas Kopeloff, Ph.D. Baltimore: The Williams and Wilkins Company, 1926. Pp. 211.

LE TRAITEMENT DE LA SYPHILIS PAR LE BISMUTH. By Georges Drouet, M.D. Third Edition. Paris: A. Maloine et Fils, 1926. Pp. 75.

BETTER MAN ON THE BUSINESS OF MEDICINE. By Charles Elton Blanchard, M.D. Youngstown, Ohio: Medical Success Press. 1926. Pp. 249.

THE SURGICAL CLINICS OF NORTH AMERICA. February 1926, VI, No. 1, Philadelphia Number. Philadelphia: W. B. Saunders Company, Pp. 325.

MITTEILUNGEN AUS DER MEDIZINISCHEN FAKULTÄT DER KAISERLICHEN UNIVERSITAT ZU TOKYO. Tokyo. Kaiserlichen Universität. 1925. XXXII, No. 3. Pp. 317-604.

LA RADIOLOGIE DU MEDECIN PRATICIEN. RADIODIAGNOSTIC DES MALADIES DE L'APPAREIL DIGESTIF. R. Ledoux-Lebard. 1925. Masson et Cie. Pp. 288.

THERAPEUTICS, MATERIA AND PHARMACY. By Samuel O. L. Potter, A.M., M.D. Philadelphia: P. Blakiston's Son & Co., 1926. 14th Edition. Pp. 972.

VERORDNUNGSBUCH UND DIETETISCHER LEITFADEN FÜR ZUCKERKRANKE. By C. von Noorden und S. Isaac. 3d and 4th edition. Berlin. Julius Springer. 1926. Pp. 135.

ARBEITEN AUS DEM PATHOLOGISCHEN INSTITUT DER UNIVERSITÄT HELSINGFORS (Finland). Herausgegeben von Prof. Dr. Axel Wallgren. Neue Folge IV, Nos. 1 and 2. Jena. Gustav Fischer. 1926. Pp. 226.

YOUNG'S PRACTICE OF UROLOGY. Based on a Study of 12,500 Cases. By Hugh H. Young and David M. Davis with the collaboration of Franklin P. Johnson. Vol. 1, pp. 746. Vol. II, pp. 737. Philadelphia and London: W. B. Saunders Company, 1926.

TRANSACTIONS OF THE TWENTY-THIRD ANNUAL CONFERENCE OF STATE AND TERRITORIAL HEALTH OFFICERS WITH THE UNITED STATES PUBLIC HEALTH SERVICE. Public Health Bulletin No. 161. Washington, D. C.: Government Printing Office, 1926. Pp. 125.

SCIENTIFIC REJUVENATION WITHOUT OPERATION. The New Science of Radioendocrinology in its relation to Rejuvenation and the Relief of Common Ailments Bases on the Radiation Technic of Dr. Eugen Steinach. New York: Medical Science Publishing Company, 1923. Pp. 64.

LEAD POISONING. Medicine Monographs. Vol. VII. By Joseph C. Aub, Lawrence T. Fairhall, A. S. Minot, and Paul Reznikoff. With a Chapter on the Prevalence of Industrial Lead Poisoning in the United States. By Alice Hamilton. Baltimore: The Williams and Wilkins Company. 1926. Pp. 265.

Vol 3
No. 12

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Russell L. Haden, M.D., Kansas City 783

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The Massachusetts General Hospital.
Grace Whiting Myers, Boston, Mass. 833

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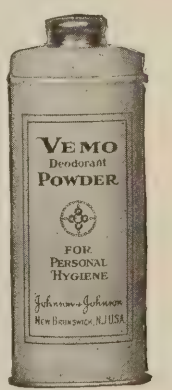

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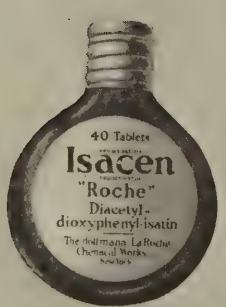

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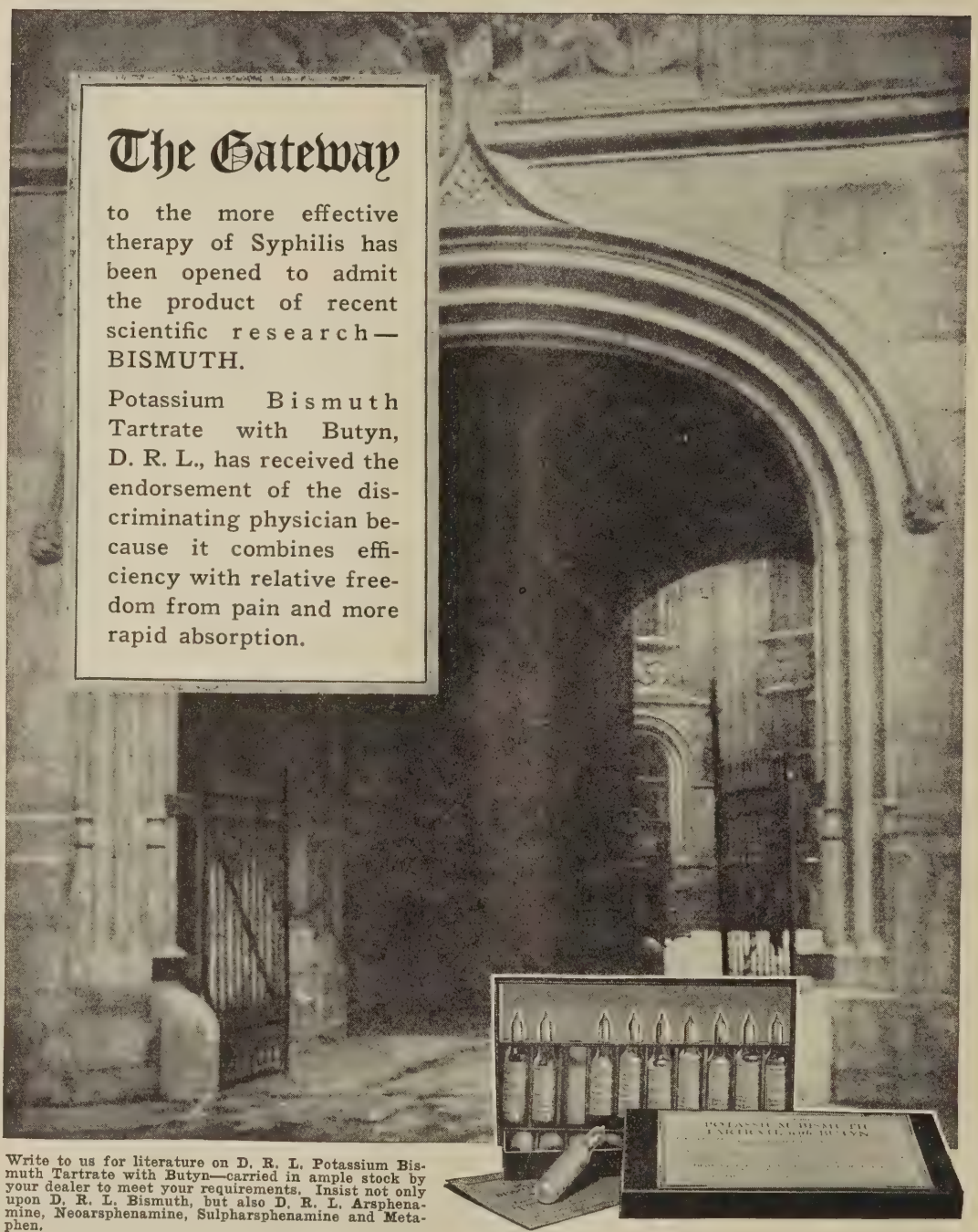
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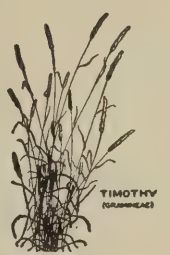

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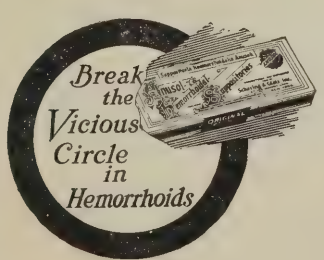

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Jour. A. M. A., March 6th, 1926, Vol. 86, No. 10, p. p. 668-670.
Minnesota Medicine, April 1926, Vol. 9, No. 4, p. p. 156-160.

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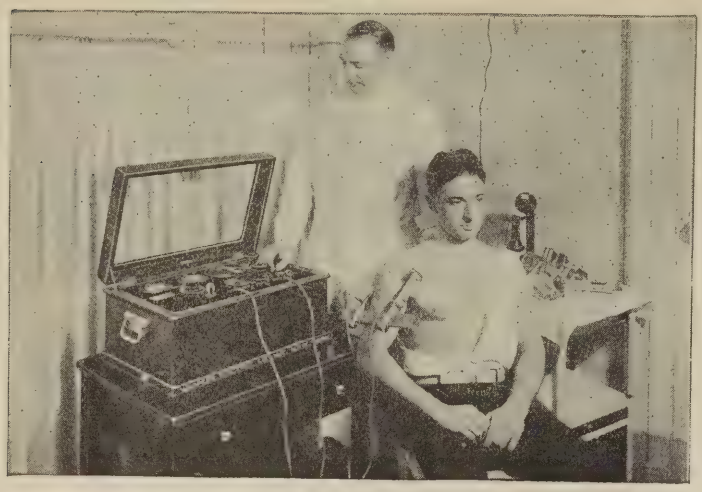

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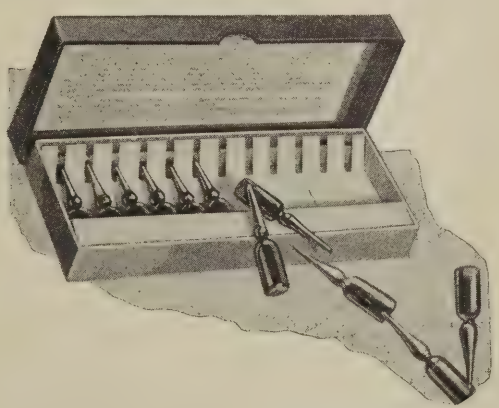

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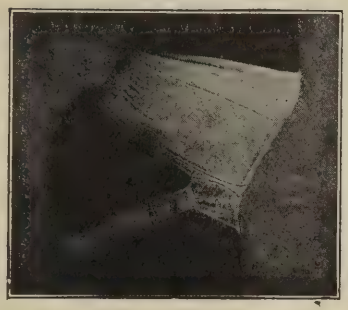

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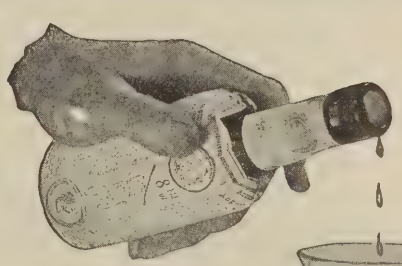

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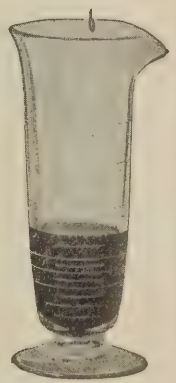

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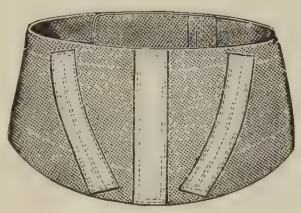

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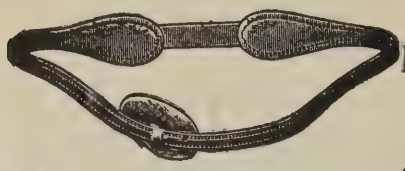

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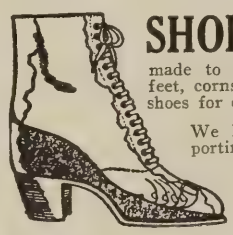

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